The Mining Journal

London, May 31, 1957

In this issue . . .

Vol. 248 **No. 6354**

Established 1835

Joint Editors
U. Baliol Scott R. Bruce Dunfield

News Editor A. G. Thomson
Assistant Editor R. Bowran

Display Advertisement Manager
E. S. Hooper

Circulation
Robert Budd

Published each Friday by

THE MINING JOURNAL LTD.

Directors
E. Baliol Scott (*Chairman*) U. Baliol Scott (*Managing*)
G. A. Baliol Scott R. A. Ellefsen

15, WILSON STREET,
LONDON, E.C.2.

Telegraphic Tutwork London
Telephone MONarch 2567 (3 lines)

Annual Subscription £2 10s. Single copy ninepence

Union Minière's Power Reserves

NEARLY half a century has elapsed since the construction of the Lubumbashi smelter, in 1910, to treat high-grade copper-oxide ore furnished by the Star-of-Congo open-pit mine. At that time the potential hydro-electric resources of the Belgian Congo were entirely undeveloped. The copper ore was melted in blast furnaces in which the flux was allowed to mix with coke, which at the outset had to be imported from Europe. Some years later the Wankie coalfields in Rhodesia, 750 miles from Elizabethville, were developed as a fuel supply, but due to the high consumption of coke arising from the refractory nature of the ore, pyrometallurgical smelting continued to be very costly.

Successful metallurgical studies, together with the ready availability of water power sites, led to the adoption of electrometallurgical processes. In 1925 SOGEFOR was founded to construct a dam and hydro-electric power plant at Coronet Falls on the Lufira River, close to the metallurgical plants. The spectacular increase in Union Minière's power requirements during the past decade has led to the construction of further dams and plants, of which the latest is Le Marinel with its naturally embedded dam completed in 1956. Three of Le Marinel's four turbines are already in service and within a few months, when the fourth one is completed, the plant will have a total capacity of 248,500 kW. As will be seen from the chairman's statement (which appears on page 701), a total of 1,293,000,000 kWh. was produced by Union Minière's four power stations in 1956.

On first thoughts it is perhaps difficult to appreciate the necessity for such a very large increase in hydro-electric capacity as will result from the completion of Le Marinel, which, when in full production, will approximately double the power potential available to Union Minière in 1955.

Electric power from Le Marinel is at present being distributed to the various Copperbelt mines through the central switching station at Kitwe, thus helping to alleviate the difficulties resulting from the acute shortage of coal trucks, which has hitherto been a major problem to the copper mining industry in Northern Rhodesia. The output exported to the Copperbelt initially was about 20 mW., the agreement being that this amount should be increased later, as more sections of the plant at Le Marinel were put into commission. At present Northern Rhodesia is probably taking a supply equivalent to about 20 per cent of Le Marinel's ultimate output. Presumably it will remain more or less at this level until mid-1960, when the first stage of the Kariba project is scheduled for completion. Thus, the Copperbelt's needs, however urgent, can scarcely have been a major consideration in determining the ultimate capacity of Le Marinel.

Doubtless one of the principal factors governing Union Minière's future needs is the heavy consumption of electrical power in the production of electrolytic copper, which is in the region of 2,000 kWh. per ton. At present only about half Union Minière's copper production is electrolytic. As the old mines in the eastern concessions decline, however, the company will become increasingly dependent on the western mines, whose output will be refined in electrolytic plants. Assuming that copper production remains constant at the 1956 level of around 250,000 tonnes, the output of

electrolytic, and hence the quantity of power required for refining, will eventually be doubled. In round figures, this will eventually involve an additional 250,000,000 kWh. per year.

A further consideration is that the new deposits in the west are open cast and all equipment is electrically operated. As the company comes to rely more fully on the western area for its copper production, there will clearly be a significant increase in the amount of power per ton mined, as well as per ton treated.

A further probability is that the trend will be towards the production of a growing proportion of cobalt in granular form, which involves a very much higher consumption of electrical power—7,000-8,000 kWh. per ton. While the production of granular cobalt involves some three or four times as much power as that of electrolytic copper, this point should not be over-stressed, bearing in mind that Union Minière's total output of cobalt in all forms during 1956 amounted to only 9,089 tonnes.

There has been a considerable increase in the quantity of power consumed by Métalkat in the production of electrolytic zinc, which is now at the rate of some 40,000 tonnes annually. Since maximum production appears to have been more or less achieved, however, there is presumably no need to provide for any additional power requirements for this industry.

Taking into account the potential outlets we have endeavoured to indicate, as well as such logical (but as yet hypothetical) developments as the production of ferro-manganese from Congo ore, and bearing in mind that hydro-electric power has replaced some 50,000,000 kW. formerly generated from coal, it seems evident that Union Minière has made very generous provision for, at any rate, its immediately foreseeable more short-term needs, and in effect, sections of the Le Marinel plant are likely to be in the nature of stand-by units at this stage.

This situation, of course, is highly desirable, having regard to the critical dependence of hydro-electric plant on weather conditions. It will be recalled that the severe drought of 1955 made it necessary for the central thermal plant to maintain a higher rate of activity throughout the whole of the year, due to inadequate water supplies for the hydro-electric plants. In fact, the total hydro-electric power generated in 1955 amounted to only 860,751,400 kWh., compared to 955,000,000 kWh. in the previous year—a striking indication of the wide fluctuations which must be taken into account when planning for future needs.

Certainly the very comfortable situation across the border must be viewed with much satisfaction in the Copperbelt, since it seems to offer a reassuring prospect of future assistance should Kariba fall behind schedule. Moreover, the Rhodesian economy, if as ebullient as seems likely, will make considerable demands on Kariba's projected capacity. The possibility can scarcely be excluded that, at a future date, further advantage might be taken of the facilities so wisely provided for the interchange of power between the two neighbouring territories.

NEW LOOK FOR STEEL

Since the war, approximately £700,000,000 has been spent on the expansion of British steel capacity and the aggregate output has been increased by about 50 per cent. The record of the industry is not discreditable, but in retrospect it is manifest that its performance has fallen short of national requirements, and in the race for expansion we have been outpaced by our principal competitors overseas.

With the second post-war development programme approaching completion, the British Iron and Steel Federation has now formulated in great detail a further plan designed to increase total capacity to at least 28,000,000 ingot tons by 1962. Financial responsibility for a series of projects involving in the aggregate a further outlay of £600,000,000 in the next five years rests fairly and squarely on the shoulders of the big producing companies. But the final authorization of the Minister of Power is now awaited.

A decision is believed to be imminent. In the preparation of the development plan the Federation has acted in close collaboration with the Iron and Steel Board, whose report is already in the hands of Lord Mills, to whom, on his appointment, was transferred the authority formerly exercised by the President of the Board of Trade.

Presumably there is general agreement on the broad outlines of the third development plan which takes cognizance not only of the rapidly expanding use of steel, but also of the changing pattern of demand for different products, the heavily increased consumption of raw materials, and the calls upon the physical resources of a nation already confronted with the intractable problems of over-full employment.

Admittedly there is a wide margin of possible error in the finalization of estimates of the potential market for British steel five or six years ahead. It may be argued, for example, that the swollen demand for flat steel, for steel plate to build tankers, pipe lines and atomic power stations, will have passed its zenith in 1962. But decisions cannot much longer be delayed. Four new plate mills designed to increase rolling capacity by at least 1,000,000 tons per annum constitutes an integral part of the Federation's new development programme, and since their construction cannot be completed in much less than five years, a prompt start would appear to be essential.

One factor which encourages an optimistic view of the outlook for British steel is the relatively low cost of production. In an era of inflation, the Iron and Steel Board has exercised a firm control over British steel prices, which are amongst the lowest in the world. Cheap steel has been an inestimable boon to the great steel-using industries and in some measure no doubt accounts for the fact that nearly 50 per cent of the nation's export trade is comprised of steel manufactures.

New techniques, moreover, are constantly being evolved. Improved ore treatment is reducing fuel costs. Advanced instrumentation has not only speeded up production but has led to many improvements, whilst the recent increase in the use of oxygen has helped to produce better steel more quickly.

Sir Charles Goodeve, director of the British Iron and Steel Research Association, who recently completed a 33,000 mile tour of the steel works in India, Australia and Canada, has returned with the heartening belief that with Commonwealth co-operation there is a big future for cyclo steel, the manufacture of which has now reached the experimental stage in British steel plants.

In this process, just described at the Sheffield meeting of the British Association, finely powdered ore and coal or oil are reduced to fluid form by oxygenation. The resultant steel, later provided with a carbon content, is thereafter used to feed the electric furnaces.

In Canada there are vast deposits of magnetite ore and the suggestion is that Canada should adopt the cyclo steel process, and send the granulated steel to this country, where it can be worked up in the electric furnaces.

Sir Charles Goodeve has returned also with a profound impression of the potentialities of India as a centre of steel production. With a super-abundance of ore and coal, and with wage rates which are almost derisory in comparison with those of Western Europe and the U.S. India requires only the equipment to be able to produce the cheapest steel in the world.

Her active competition in world markets is still remote. In the course of time there may be limited supplies available for distribution in South East Asia. But India's domestic steel requirements for the development of the national resources are almost limitless and with the active support of the government a feverish race has begun to expand productive capacity.

American engineers are engaged on big extensions of the great Tata steel works. Three entirely new steel plants are being built by British, German and Russian contractors, and the ultimate target of 15,000,000 tons per annum is deemed to be perfectly practicable.

There are many difficulties to overcome, of which transport is the most formidable. This indeed may be the determinate of the rate of expansion. But India's future as a steel producer is assured by one priceless asset. Within her vast territories are richer iron ore reserves than have yet been discovered in any country in the world. Proved deposits total 6,000,000,000 tons with a 60 per cent fe content and other deposits are estimated to amount to 20,000,000,000 tons. Those endowments promise better standards of life for India's teeming millions.

MINERAL EXPLORATION IN AUSTRALIA

Mount Isa Mines Ltd., exploring in the Northern Territory, has discovered an interesting outcrop containing lead carbonate, 400 miles north-west of the Mount Isa Mines. At the present stage of the work, the outcrop has been delineated for a length of 400 ft. by a width of 120 ft., and the metal content approximates 10 per cent lead. A prospecting shaft has been sunk to 60 ft. and a crosscut is out 70 ft. in similar material. Diamond drilling is to be undertaken.

The present disadvantage facing base-metal mining in the locality is transport; the effect of its remoteness upon labour supply can be minimized if transport can be established at a cost commensurate with the importance of the deposit. The region is little known mineralogically, being very sparsely settled station country, and its mineral possibilities are very interesting.

This is a case to which most liberal taxation concessions should be given, but it seems unlikely under present taxation policy, that such consideration can be expected, since Mount Isa Mines is a prosperous lead-silver-zinc-copper mining company. Nevertheless, under existing conditions, an important mineral occurrence such as Mount Isa's discovery may well be, could be an impossible undertaking economically, unless assisted. Provision for taxation calls for money that could otherwise be used for expediting development, and so increasing the country's wealth.

A new development in the search for oil will be prospecting along the Great Barrier Reef from the Queensland coast line to the territorial limit. This work will be undertaken by Inter-state Oil Ltd. in which Consolidated Zinc Corporation holds 50 per cent of the shares. The authorized capital of the company, which was formed in 1955, is £A1,000,000. A preliminary reconnaissance will be commenced almost immediately.

The Minister for National Development has stated that in the past three years private enterprise in Australia has spent the sum of £A28,000,000 on the search for oil in Australia and Papua.

This work has been assisted by the government in the form of high priority in geological and geophysical surveys of the sedimentary basins considered most likely to produce oil in commercial quantities. Geological advice has been given to small companies. Three holes have been drilled in the Kimberley country, Western Australia, to obtain information helpful to the search. Importation, in the past five years, of 14 drilling plants at a cost of £A4,250,000 has been licensed. Income tax concessions have been granted which provide that neither a company nor a shareholder will be subject to tax until profits have restored the full amount of the investment in the enterprise.

The last is a most important provision and one that could be extended to all mining enterprises, to the great benefit of the industry, and ultimately, of the country. It has been stressed repeatedly that dividends paid are actually only return of capital until the subscribed capital has been returned and it is an unfortunate fact that many mining companies go out of existence before this return has been made. Gold, uranium and oil are exempt from taxation; all other metals have the partial exemption of 20 per cent of profits, but lead and zinc receive no taxation consideration.

If the search for minerals is to be expedited, as is most important, every encouragement should be given to prospecting and exploratory companies, and to such companies as reach the productive stage, during their initial productive years. An intelligent measure of taxation relief would go far to counterbalance the deterrent to investment caused by rising costs and decreasing hours of work, added to which is the steady addition to amenities demanded and provided, a large measure of which must be provided before the actual exploration of a property can be undertaken.

INTERNATIONAL COAL CLASSIFICATION

The development of a new international system for classifying various coals was announced on March 18, 1957, by the U.S. Bureau of Mines. The new system, proposed by the United Nations' Economic Commission for Europe (ECE), should facilitate European coal trade and make it easier for countries to exchange scientific information on coal.

Designed to meet the need for a "common language" in evaluating anthracite and bituminous coals of various countries, the classification system was formulated by leading coal experts in Europe and the United States who are members of the ECE Coal Committee's Classification Working Party. Following a two-year trial period, the Coal Committee recommended that the system be given practical application

Under the new system, the type or rank of a coal is indicated by a code number which reflects volatile matter content, calorific value, and caking and coking properties.

The following countries participated in developing the system: Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, the Federal Republic of Germany, France, Greece, Hungary, Italy, the Netherlands, Poland, Sweden, the Union of Soviet Socialist Republics, the Eastern Zone of Germany, the United Kingdom, the United States, and Yugoslavia.

Mining Methods in Ghana

IN the early 1930s there were only two quartz reef mines producing gold, Ashanti Goldfields and Ariston Gold Mines. Bibiani joined the group in 1933, Konongo in 1936 and Ghana Main Reef in 1939.

In general, the ore bodies of these mines have friable walls due to the presence of carbonaceous material, known locally as graphite, which is derived from the graphitic phyllites in the country rocks. Where such conditions exist mining methods affording close support are demanded in the interests of safety and minimum dilution of ore. At the Ashanti Goldfields mines, where the ore bodies of this type are among the most difficult to mine, square setting with sand filling was adopted, and except that waste rock has largely replaced sand as filling, it remains the principal method in use at the mine to-day.

At Ariston, horizontal cut and fill, with stulls to support the back of the stope where necessary, was in general use until superseded by incline cut and fill, which not only effected savings in labour but proved safer than the old method. The supply of sufficient waste rock became a problem, but was solved by opening a surface quarry and lowering the rock to the 6th level, where it was transported by conveyor belt to a main waste pass from which it was distributed throughout the mine.

At Ghana Main Reef the ore bodies are mostly narrower than at Ariston, where widths of up to 50 ft. or more have been stoped, and it was here that incline cut and fill was first used in the Gold Coast.

At Konongo, shrinkage stoping was the principal method for some years, but as the workings became deeper or the walls more graphitic, incline cut and fill superseded it.

The methods in use at Bibiani included shrinkage, horizontal cut and fill and long hole stoping, and recently block caving has been started in one section.

In the banket reef mines, the walls are generally strong quartzites and open stoping methods are applicable and call for little comment. Mat packs for support and scrapers for handing the broken ore in the flatter sections are usual. In the steep sections underhand stoping was common, but in recent years it has been replaced by rill shrinkage. In this method the stope face is carried parallel to the angle or repose of the broken ore which, as the face advances, can be drawn off in the rear without disturbing the face of the pile. It has the advantage that less broken ore is immobilized in the stope than is the case with the conventional flat-back shrinkage stope.

Mechanization

Underground mechanization of the lode mines had not advanced very far when war broke out in 1939 and, of course, was practically at a standstill for its duration.

Due to the shortage of underground labour and its cost after the war, however, it became essential, if the plans for expansion already in hand were to be fulfilled, or even current outputs maintained, to employ considerably more mechanical aids.

Up to this time electric battery locomotives had been used for mechanized underground haulage, but they had increased greatly in price, and it was decided to try out at Taquah and Abosso diesel locomotives, which were very much cheaper. The experiment was only partially successful, for although the diesels were lower in first cost and possessed the added advantage of greater flexibility (since they required no charging stations on each level where they worked), the cost of maintenance proved excessive and largely outweighed the advantages. This is no unusual problem, especially where skilled labour is difficult to obtain, but to a large extent it may determine the type of machine that can be used economically.

After the war, the use of mechanical loaders was greatly increased and was responsible for appreciable saving in labour requirements for development. Detachable bits for rock drilling were given extensive trials in 1948 and, except on the banket mines where the rock is particularly hard, were in use on many mines until the introduction of the tungsten carbide bit in 1952. The t.c. tipped steel used with air legs proved more satisfactory than the t.c. detachable bit, and has largely replaced the older types.

Opencast and Alluvial Mining

The opencast mines, naturally, were highly mechanized from the beginning. For example, the Marlu mine was equipped with both diesel and electric shovels up to 1¼ cu. yd. capacity, the ore being broken in 30-ft. benches and loaded into 4½ cu. yd. cars drawn by diesel locomotives on 2 ft. 6 in. gauge track. The longest haul to the mill was about 10 miles. Some of the ore and overburden was soft enough to be mined by the shovels without the use of explosives, but mostly it was broken by blast hole drilling.

The weathered banket ore of the Pepe deposit at A.B.A. Limited was mined by shovels similar to those at Marlu and was transported to a receiving ropeway bin by rubber tyred diesel trucks. The overburden, which in places was up to 80 ft. thick, was generally soft and was stripped by a Monighan dragline with bucket capacities of 5 cu. yd. with a 200 ft. boom or 7 cu. yd. with one of 160 ft. The ore was harder than the overburden and was broken by blast holes in benches up to 25 ft. high.

Although the most ancient form of gold mining in the Gold Coast, the rewards of alluvial mining have been meagre. Dredging on the Ankobra, Fura, Ofin and other rivers followed the Jungle Boom of 1901-02, and reached its maximum in 1909, when 15 dredges were at work. Gold production from dredging is recorded as 20,102 oz. for that year. By 1925 dredging had ceased and it was not revived until the Tano Gold Dredging Company started dredging the Tano River with two dredges about 1935. The venture was unsuccessful and the company went into liquidation shortly afterwards.

In 1938 the Bremang Gold Dredging Company began work on the Ankobra River with two bucket dredges adding, after the war, the two dredges originally owned by the short-lived Tano Company. This ground has since been worked out and the last of the four dredges is in process of being transferred to the Ofin River to join the other three which are now operating there.

The Ofin River alluvial ground averages about 2.7 grains per cu. yd., and total dredge capacity is some 7,000,000 cu. yd. per annum.

The mines are situated in the forest zone where shade temperatures seldom exceed 95 deg F., nor fall below 60 deg. F., and night and day temperatures are not widely different. Humidity is high and the cooling power of the air is low. Official figures indicate an annual mean shade

temperature of 89 deg. F. maximum, 70 deg. F. minimum, and 83 per cent relative humidity.

Ventilation and Power

In general the mines are hot and humid, and as the workings got deeper and of greater lateral extent, it became evident that comprehensive ventilation schemes would have to be drawn up. New ventilation shafts were sunk, airways driven and several large fans of axial flow type installed in accordance with each mine's needs.

At one quartz reef mine the rock temperature at a vertical depth of 3,096 ft. was measured as 93.5 deg. F., which gave a temperature gradient of 174 ft. per 1 deg. F. Temperatures up to 96 deg. F. saturated have been recorded in stopes with kata-thermometer readings correspondingly low but, although locally there are areas still requiring much better ventilation, conditions are now vastly superior to what they were. It is thought that the present schemes should suffice until stoping depths are at least 4,000 ft. below the surface; after which in some cases air-conditioning may be required.

The Gold Coast possesses no coal deposits and in the early 1930s, when the second expansion of the industry commenced, steam raised in wood-fired boilers was the principal source of power, though wood-producer gas engines and some diesel oil engines were also in use.

The firewood was cut by native contractors who had no illusions about the importance of their work to the mines, and who by their demands and strikes frequently placed the power supply in jeopardy. A review of the position was made in 1935 to determine whether it would be better to provide a central source of power for all or various groups of mines, or to expand the individual stations. It was decided to adopt the latter alternative and to convert the wood-fired boilers to oil-firing. This was done, but after the war the steam plants were gradually replaced by diesel-electric sets and no steam, except for one or two steam hoists still giving satisfactory service on main shafts, has been used for some years as a primary source of power on the mines.

A degree of centralization was later effected when the Bremang Company's station, originally designed to supply power to the company's dredges, was extended to include the Ariston and Gold Coast Main Reef mines.

Ore Treatment

In the pioneering stages covering the last twenty years of the 19th century operations were on a modest scale. Light stamp batteries were used for crushing the ore and the freed gold was recovered on amalgam plates. At the turn of the century milling was based on South African practice, which included crushing in stamp batteries and pebble milling, followed by amalgamation and cyanidation. On the banket ore mines acceptable recoveries were obtained, but on the quartz reef mines of Prestea and Obuasi, on account of the colloidal nature of the gold in the quartz, and of the presence of amorphous carbon in the ore, the recoveries were low and of the order of only 60 per cent to 70 per cent.

At Ariston, following the development of the flotation process for base metal ores and its application to ores of the Prestea type being recognized, flotation was included in the treatment in the late 1920s. Eventually the stamps were replaced by gyratory crushers, pebble mills by ball mills, and amalgam plates by strakes. The flotation concentrates were roasted and the resulting calcine cyanided. Overall recoveries are about 90 per cent on 6½ dwt. ore.

At Obuasi in 1905 the then Western Australian practice of dry crushing, roasting the whole of the ore and cyaniding was adopted by Ashanti Goldfields. In 1919, however, when unsettled conditions following the Great War led to an extraordinary cocoa boom and to an acute shortage of labour, espcially for firewood cutting, the roasting process was abandoned and a wet process substituted. This was unsuccessful, and labour then being more plentiful, the old roasting process was reverted to in 1924. This remained in use until 1947, when it in turn was superseded by an entirely new plant, which though built in 1939 was not finally completed until 1947 on account of the war. It conforms with modern practice, as already outlined for the Ariston mine, and recoveries close to 90 per cent are obtained on a head value of nearly 20 dwts. per ton.

The new plants at Konongo and Bibiani mines, which came into operation in 1936 and 1939 respectively, included flotation but no roasting, since satisfactory recoveries were obtained by direct cyanidation of the

By G. Keith Allen, B.M.E.

Reader in Mining Engineering, Royal School of Mines, Imperial College of Science and Technology

flotation concentrate. At Bibiani a recovery of about 92 per cent is obtained on 4½ to 5 dwt. ore.

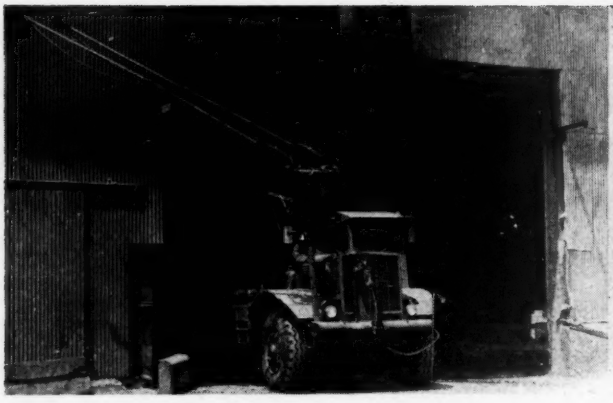
Subsequently, research at Konongo established that on Konongo ores, which formerly averaged 10 dwt. per ton but which for some years now have now averaged nearer 20 dwt., substantially improved recoveries and cheaper operation could be obtained by finer grinding and cyaniding the strake tails. A later modification was to replace the strakes by Johnson concentrators. Recoveries of 95.5 per cent on a mill head of some 20 dwt. per ton are obtained.

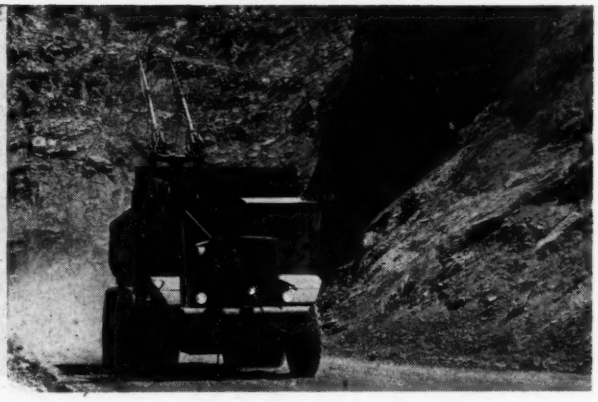
At Ghana Main Reef free gold is recovered on strakes, the strake tails being thickened and cyanided. On a head value of some 7 to 8 dwt. per ton the recovery is about 90 per cent.

The Marlu oxidized ores were treated in an "all slime" plant milling in cyanide solution. The original plant included Dorr thickeners, a large Butters plant, and an even larger plant of fourteen Oliver filters. Later the plant was simplified by using counter-current decantation (with the aid of a new flocculent reagent) in place of the Butters and Oliver filter plants. The gold content of the ore was from 2½ to 3 dwt. per ton and recoveries of approximately 85 per cent were obtained.

On the banket mines the new plants were built between 1935 and 1941. They included recovery of free gold on amalgam plates or strakes, and cyanidation of sand and slime products separately. An innovation at Amalgamated Banket Areas was the replacement of strakes by jigs in the primary milling circuit, and by Johnson concentrators in the secondary. This led to reduced labour costs and greater security. Gold recovery from these plants was from 94.5 to 96 per cent on head values less than 5 dwt. per ton.

The weathered banket ore at Pepe on Amalgamated Banket Areas was originally ground to the same fineness as the underground ore until research in 1945 established that crushing this ore to ¼-in. mesh prior to classification was sufficient to obtain high extraction by sand and slime cyanidation without finer grinding.





The 802-E on surface. At left, the radius of trolley pole play, and at right, positive control in trucking operation

THE Kenworth Motor Truck Co., United States, has recently developed a new, rugged and highly versatile, electrically-driven, rear dump rock and ore-moving truck, named Model 802-E. The capacity of the new truck is 16 yds., or 24 tons.

In the use of the new truck, power is supplied through twin overhead trolley wires much the same as those in use for trackless trolley equipment by many municipal transit systems. The drive motor is a General Electric 550 v. originally designed for heavy-duty railway service. The

Moving Ore

motor can develop a maximum zero speed torque of approximately 3,800 ft. lb. It has a maximum speed of 3,100 r.p.m. This motor, coupled with the gear reduction, makes a truck speed of 35 m.p.h possible. These trucks normally operate at much lower speeds, however. On downhill operation the traction motor is also used for dynamic braking. Two stages of braking are standard. With this braking feature, use of the service brakes is virtually unnecessary except when coming to a full stop. Current drawn during acceleration is estimated at 900 amps. for approximately 3.5 sec. Running current is estimated at 555 amps., with truck operating fully loaded at 9.6 m.p.h. up a 10 per cent grade.

The problem of overhead trolley wires at the shovel and the crusher is met by simple engineering. For spotting at the shovel, underground, the truck is equipped with a 5 ft. dia. cable reel. In a way of explanation, the underground operation is room and pillar. The truck moves underground through a 20 ft. by 30 ft. tunnel on the overhead trolley wires. Upon reaching the entrance to the room, the truck manoeuvres on an overhead turn-around device.

As soon as the truck enters, the trolley poles are retrieved and the cable reel is plugged into a wall receptacle in much the same way as plugging in a toaster in one's home. The truck then backs into spotting position at the shovel, the cable being paid out at the proper rate by the electrically-driven reel. When the truck is loaded,

By Trolley

the driver moves forward on the power supplied through the cable, the cable being automatically retrieved.

On reaching the entrance to the room, the cable is unplugged. The trolley poles are replaced on the overhead wires and the truck moves smoothly and rapidly to the crusher. The truck is again brought about on an overhead turn-around and backs into dumping position.

The 802-E underground. At left, the unit in normal haulage, and at right, loading at the face

Concentration Studies at the Chemical Research Laboratory

FOR several years the Chemical Research Laboratory of the Department of Scientific and Industrial Research has been engaged on investigations on behalf of the U.K. Atomic Energy Authority, which have been directed mainly towards the design of processes for the treatment of uranium and thorium ores from specific deposits. This work has led to the development of a number of satisfactory flow sheets.

A certain amount of work has also been done on the extraction of other metals; in particular, the recovery of niobium from an ore and the development of an ion-exchange process for extracting gold from cyanide solutions.

Gold Recovery by Ion Exchange

Ion exchange processes for gold recovery, as designed at the Chemical Research Laboratory, were reviewed in our issue of October 21, 1955, p. 466. By that date a process patented by the C.R.L. had already given highly encouraging results on a laboratory scale and was regarded as potentially attractive for the treatment of pregnant liquors from which a satisfactory recovery of gold could not readily be achieved by the existing zinc process. As pointed out in our previous articles, by multi-cycle operations the concentration of gold can be built up on the resin, thus minimizing the volume of organic solvent required. If hydrochloric acid is used, the organic solvent can readily be recovered for further use. Providing the process is operated on a resin in pulp basis, the need for expensive filtration equipment is avoided.

By October, 1955, a small pilot plant built by a British manufacturer to operate the process had already been running for nearly a year on a gold mine in Southern Rhodesia, and recovery had been started at a second and larger plant. Meanwhile, however, the C.R.L. team of investigators had started work on another method which, it was expected, would be cheaper and more simple to operate. A disadvantage of what, for convenience, might be termed the first method, is that the metallic cyanides are adsorbed before the gold, which moves down the reverse of the column. In the second and much improved process, the opposite conditions occur. The second method is based on the fact that a weakly basic (dimethylamine) resin will adsorb gold from a cyanide solution in preference to other metals, which are normally present in much larger quantities. By using three columns the process can be made continuous. The main stages of the improved process were outlined in our previous article.

Following an improvement in gold absorption, which was found when using a dimethylamine resin PX 2 prepared at the C.R.L., as compared with a commercial analogue, the relationship between the nature of the basic group on the resin and the gold selectivity of the resin has been further investigated. Experimental methods were devised for the determination of strong base groups in a resin sample, for the introduction or removal of strong base groups from any dimethylamine type resin, and for the preparation of a dimethylamine resin with less than 1 per cent strong base groups (*Chemistry Research, 1956*).

The selectivity of a dimethylamine resin for gold in cyanide solution increased as the percentage of strong base groups present decreased, but the increase in selectivity was accompanied by some decrease in capacity. The presence of thiocyanate in the gold cyanide solution further decreased the capacity of the resin for gold. It was shown experimentally that a resin with 6 - 10 per cent strong base groups afforded the best compromise by combining a high selectivity for gold with a high working capacity.

As stated in *Chemistry Research, 1955*, aurocyanide is efficiently eluted from the resin with aqueous 2 N thiocyanate solution. By using a suitable recirculating technique it is possible to reduce the thiocyanate concentration to 0.2 N and still obtain efficient removal of gold. Mixtures of organic solvents with mineral acids may also be used as eluting agents for aurocyanide.

The pilot plant experiments at the Globe and Phoenix mine at Que Que, in the Sebakwe district of Southern Rhodesia, have indicated that the process, which is being developed in the U.K. by William Broby, of Rickmansworth, can be expected to prove considerably cheaper than the conventional processes currently in use for the recovery of gold from the usual "run of the mill ores". The D.S.I.R. and the National Research Development Corporation (N.R.D.C.) believe that these developments hold considerable promise of industrial application. It has therefore been decided to accelerate this work, with support from N.R.D.C.

The recovery of silver and nickel from cyanide solutions has been investigated together with that of gold. For nickel recovery it is advantageous to use a resin containing a higher percentage of strong base groups than that employed for gold. For silver recovery the strong base character of the resin does not appear to be critical. Both metals can be eluted with thiocyanate. The silver is recovered by electrolysis and the nickel by precipitation as nickel cyanide after acidification.

Uranium and Thorium

Uranium-bearing samples have been received for study from Northern Rhodesia, Australia and South Africa. In all cases the samples have been investigated with a view to ascertaining optimum conditions for the extraction and recovery of uranium in the form of a concentrate. Equipment able to treat one-half to one ton of ore per day has been erected. It consists of leaching, filtration and ion-exchange units suitably linked.

A number of ion-exchange resins have been tested as to their suitability for use in uranium recovery processes. These resins include commercially available materials possessing the necessary characteristics.

Investigations into the direct adsorption of uranium from acid ore pulps, as indicated in *Chemistry Research, 1955*, have continued. A counter-current system using moving sheets of ion-exchange membranes has been constructed.

The recovery of thorium from thorite-bearing ore has been studied and a process suitable for large-scale operation has been developed. A process for the recovery of thorium from monazite rock or sand, using alkali breakdown, has been successfully operated. Other new processes for the recovery of thorium from monazite are being developed.

A New Venture in Public Relations

GUESTS attending the opening ceremony at the Diamond Trading Company's new offices at 2 Charterhouse Street, London, E.C.1, on Wednesday, May 22, were given a preview of a new venture—an exhibition room and cinema.

Prepared for the joint use of the diamond companies and Anglo American Corporation of South Africa Ltd., the room has been designed to give shareholders and other visitors a visual impression of the mining activities of the group in Southern Africa. With informative annual reports and the quarterly review "Optima," the group has done much in recent years to reduce the great distance between British shareholders and their African interests. This latest essay should prove a valuable further aid.

Handsomely panelled in natural pearwood and marble, the main exhibition room contains four large display windows dealing with diamond, gold, copper and coal interests, and a leather map for locating them. The map is designed to pivot on its own axis and reveal a cinema screen on its reverse side. The projection room is not visible and the chairs for cinema shows are stored in concealed cupboards, leaving the floor free for a maximum number of visitors.

The main Exhibition Room leads into a smaller diorama room. Here visitors, as a change from looking into the intricacies of balance sheets and quarterly reports, can peer into the heart of a typical "stope" in an Orange Free State gold mine, see the extent of a surface plant, or, if more concerned with diamond mining, they can see the central washing plant at Kimberley, part of the workings at Consolidated Diamond Mines in South-West Africa or even diggings at Nooitgedacht.

Back in the main room most lady visitors will find it hard to resist the diamond showcase. Rough gem diamonds of many differing qualities contrast with industrial quality diamonds and a display of the tools in which they are used.

Anglo American Corporation's interests are represented mostly by large colour transparencies of new developments in the Orange Free State, the Northern Rhodesian Copperbelt and at Wankie Colliery, and there are also displays of some of the principle ores mined.

The showcases, and indeed the whole exhibition, have been planned for elasticity in display and versatility of use—a necessary virtue if it is to keep abreast of developments in Southern Africa.

Though the building is entirely new, it does, in fact, occupy the site of the group's former diamond offices, which together with the entire block, were destroyed by incendiary bombs during the night of May 10, 1941. As Sir Ernest Oppenheimer stated at the opening ceremony, the new No. 2 Charterhouse Street must be looked upon as a part of the design of the London Planning Committee, which aims at repairing war damage and rebuilding a more beautiful London.

Those who are actively engaged in the diamond trade will also regard it as a symbol which shows how well the trade has recovered from the dangers and vicissitudes which for so long beset it.

Sir Ernest, who has been in the diamond business for just over 60 years, recalled the difficult situation which faced him from the outset, when he was elected Chairman of De Beers in 1929. Confidence in diamonds had been shaken by the irrational exploitation of the rich alluvial diamond fields of Lichtenburg and Namaqualand. There was a general unwillingness to adjust outlooks to the new situation which these discoveries had created. During the subsequent years of the economic crisis, sales of diamonds came almost to an end.

For several years past now the demand for gem diamonds has far exceeded the production of the mines although all mines are working at full capacity. Doubtless difficult times will come again, but there is to-day every reason for confidence that the financial reserves built up in the recent years of prosperity will prove adequate to any future eventualities.

The joint exhibition room and cinema of Diamond Trading Company Ltd. and Anglo American Corporation of South Africa Ltd. The diorama room is behind the reversible map which also acts as a cinema screen

MINING MISCELLANY

Three West German firms, including Krupp, have contracted to take 350,000 tons of iron ore from Chile for delivery in 1957.

★

According to a report in Rabotnichesko Delo, it has been established that copper ore deposits in Bulgaria total 11,000,000 tons and that lead-zinc ore deposits amount to some 43,000,000 tons.

★

A new zinc mine will be built near Trzebinia in south-west Poland, where large deposits of zinc and lead have recently been discovered. These new deposits will almost double Poland's resources of both metals.

★

The French Government-sponsored organization, Bureau Minier de La France d'Outremer, has been awarded an exploration concession in the Middle Congo, French Equatorial Africa, for lead, zinc, copper and materials used for atomic energy.

★

The president, Mr. John B. Aird, referred at the annual meeting of Rix-Athabasca Uranium Mines, to the "good possibility" that the company could increase its present monthly tonnage output by a further 1,500 tons by supplying ore to the Lorado Mines customs plant.

★

Greek chrome ore production in 1956 amounted to some 44,000 tons compared with 25,300 tons in 1955. Production in the first three months of 1957 was about 12,000 tons. Production of the chrome mines of Skumnitsa (Northern Greece), one of the rather low-grade deposits which have been supplied with the latest equipment, rose to 9,000 tons in 1956 from 2,000 tons in 1955. This year it is expected to reach 12,000 tons.

★

Uranium Mines N.L. and Northern Uranium Development N.L. have decided not to establish a treatment plant south of the Alligator River field, but to sell ore to the government-owned Rum Jungle plant, subject to satisfactory negotiations. The companies have so far not been able to develop a minimum tonnage to justify the erection of a treatment plant.

PERSONAL

Baron Elie de Rothschild, of Paris, and Mr. R. F. Medlicott, London, have been appointed additional directors of the Central Mining and Investment Corporation Ltd.

★

Mr. M. W. Parish has been co-opted to the board of the Bisichi Tin Co. (Nigeria) Ltd.

★

Mr. A. J. B. Ogilvy has been appointed a director of Willoughby's Consolidated Co. Ltd.

★

Mr. W. A. Pickersgill has retired as managing director of the Cementation Co. Ltd. Mr. C. F. Grundy has been appointed in his place. Mr. Pickersgill remains on the board.

Mr. J. T. Holman has been appointed a director of the Climax Rock Drill and Engineering Works. Mr. J. H. Crawford has resigned from the board.

★

Among those attending the Conference on Mining Technology at Cleveland, Ohio, during the week commencing May 13, was Mr. A. T. Holman, chairman of Holman Bros. Ltd., of Cambourne, Cornwall. His pioneer work, particularly in industrial dust suppression and the development of dry dust-free drilling—is well-known. The Holman Dryductor drill has already been approved by the American Bureau of Mines as conforming to U.S. standards of dust control. It was displayed at the conference. Mr. Treve Holman leaves the U.S. on June 3 for a tour which will take him to the Holman subsidiary company in Australia and the company's sales organization in India.

★

The Ross Institute of Tropical Hygiene is planning to hold on June 13, 1957, a Centenary Luncheon to celebrate the birth of Ronald Ross, who discovered that malaria was transmitted by the bites of anopheles mosquitos. The luncheon will be held at the London School of Hygiene and Tropical Medicine, with which the Ross Institute was amalgamated in 1934.

★

The following dates for forthcoming meetings have been announced: The Institution of Mining Engineers, summer meeting, Newcastle upon Tyne, July 24-26; Manchester Geological and Mining Society, summer meeting, June 7; The Midland Counties Institution of Engineers, summer meeting, June 12; The North of England Institute of Mining and Mechanical Engineers, June 13.

★

The International Bank for Reconstruction and Development and the International Finance Corporation have opened a joint office at 27/32 Old Jewry, London, E.C.2 (Telephone, Monarch 3452).

To meet urgent appeals, particularly from the National Coal Board, Megator Pumps and Compressors Ltd. hold in stock a comprehensive range of pumping sets for delivery in cases of emergency. A pump set can thus be made available immediately to help fight flooding or fires in mines. The illustration shows part of Megator's main stores at Brough, Yorks, which has been palletized recently to assist in the prompt despatch of emergency orders

CONTRACTS AND TENDERS

The International Co-operation Administration (I.C.A.) has granted sub-authorizations for the purchase of the following commodities by the Etibank, Umum Mudurlugu, Ankara, Turkey: 496,000 pieces electric blasting caps, No. 8 delay; 10,000 metres D.C. electric cable; 4 mining type transportable transformers and associated equipment; 1 diesel-driven generator set; 7 direct coupled underground mining pumps; one stationary jaw crusher; 1 stationary electric air compressor, 10 m3/min.-352 cu. ft. capacity; 2 trolley locomotives for use in lignite mines; 1 diesel locomotive for shunting services, and 940 metres of conveyor belting. Interested suppliers should communicate with the buyer. The closing date is 9/6/57. B.O.T. Ref.: E.S.B./13432/57/I.C.A. Telephone enquiries to Chancery 4411, extension 360.

Machinery and Equipment

Tramming up the Shaft

Designed primarily as a time- and labour-saving device, the Zimmerman timber-car, manufactured by Dorr-Oliver-Long, Canada, is presented as an economically sound investment in time-saving alone.

In operation, a fully-loaded Zimmerman timber-car is trammed to the shaft collar, slung below the cage, lowered down the shaft, removed from the shaft and trammed to the required working place. This simplified operation eliminates unloading, placing in the cage, unloading, and finally, reloading from conventional cars. Only one or two minutes is required to sling the car, lower it, and remove it from the shaft.

As the Zimmerman car utilizes the maximum area of the shaft, a far greater volume of material can be handled per trip than by caging methods. Special timber-cars, completely enclosed by heavy wire screens, are available for removing refuse and similar matter.

The cars are manufactured in standard lengths of 8 ft., 10 ft. and 16 ft. and to fit any size of shaft compartment with two guides. The hinged guide shoes eliminate the necessity of a break in the guides or of an elaborate swing guide arrangement.

HANDLING INGOTS

An improved method of handling magnesium ingots has brought about big savings in storage space for Magnesium Elektron Ltd.

Ingots were off-loaded from casting machines on to stillages, transported to storage and made up in 200-lb. bundles which were then stacked two-high. Transport of ingots from store and loading on to lorries was carried out by a team of six.

As they come off the casting machine ingots are now built into half-ton bales on steel mock pallets, transported by truck to storage where the bales are mechanically strapped and stacked four-high. One operator using a fork-lift truck can load a lorry in a quarter of the time taken by the team of six. Capital expenditure on two fork-lift trucks and fifty mock pallets was recovered in the first year of operation.

ARC-WELDING ELECTRODES AT DOUNREAY

It is of interest to note that Murex electric arc-welding electrodes have been extensively used both for the external and internal construction of the U.K. Atomic Energy Authority's new fast reactor establishment at Dounreay.

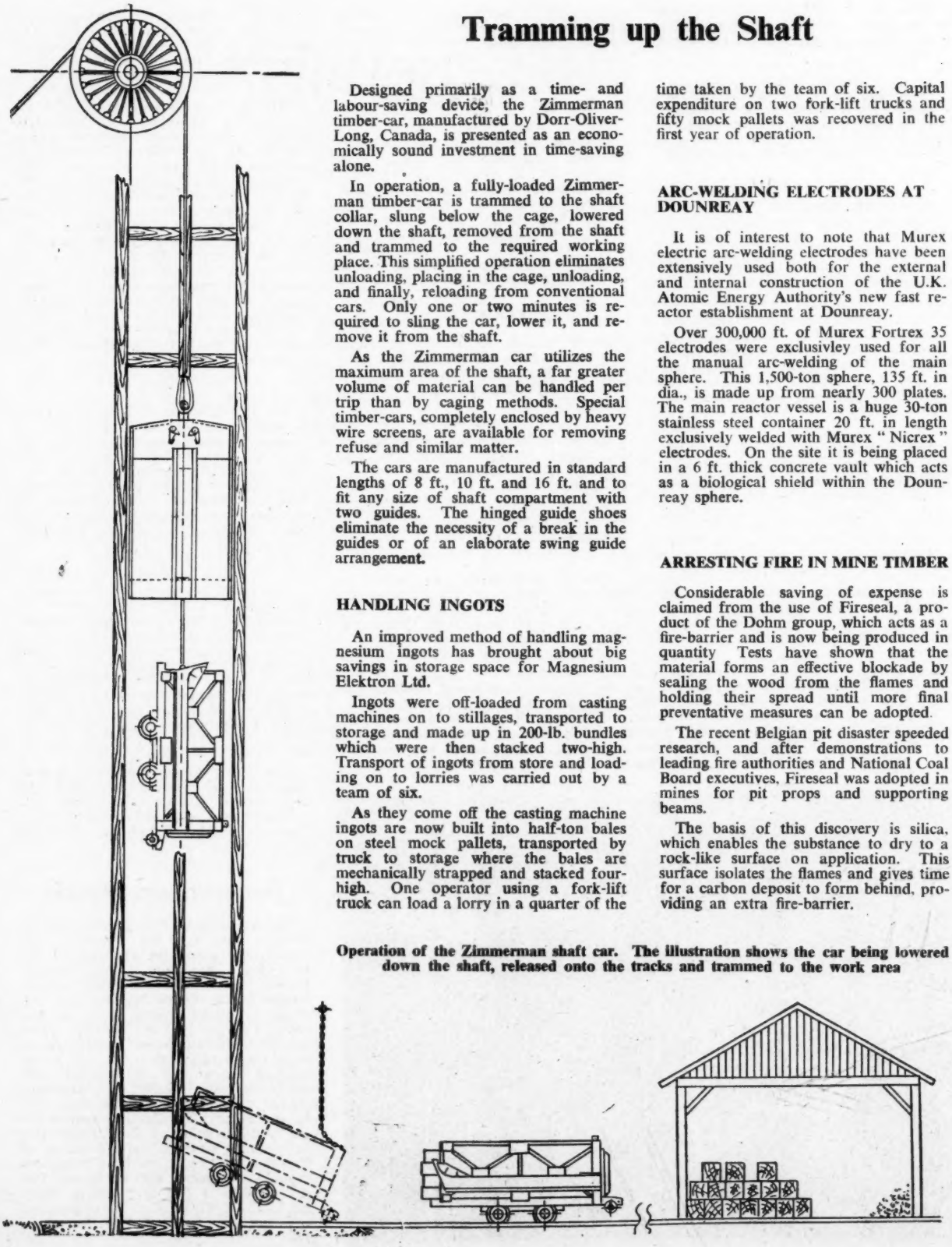
Over 300,000 ft. of Murex Fortrex 35 electrodes were exclusivley used for all the manual arc-welding of the main sphere. This 1,500-ton sphere, 135 ft. in dia., is made up from nearly 300 plates. The main reactor vessel is a huge 30-ton stainless steel container 20 ft. in length exclusively welded with Murex " Nicrex " electrodes. On the site it is being placed in a 6 ft. thick concrete vault which acts as a biological shield within the Dounreay sphere.

ARRESTING FIRE IN MINE TIMBER

Considerable saving of expense is claimed from the use of Fireseal, a product of the Dohm group, which acts as a fire-barrier and is now being produced in quantity Tests have shown that the material forms an effective blockade by sealing the wood from the flames and holding their spread until more final preventative measures can be adopted.

The recent Belgian pit disaster speeded research, and after demonstrations to leading fire authorities and National Coal Board executives, Fireseal was adopted in mines for pit props and supporting beams.

The basis of this discovery is silica, which enables the substance to dry to a rock-like surface on application. This surface isolates the flames and gives time for a carbon deposit to form behind, providing an extra fire-barrier.



Operation of the Zimmerman shaft car. The illustration shows the car being lowered down the shaft, released onto the tracks and trammed to the work area

Metals and Minerals

Zirconium is Now Advertised

An eloquent commentary on the changing status of zirconium in the U.S. is afforded by an advertisement of the Wah Chang Corporation in *The American Metal Market*, offering immediate delivery of this once scarce metal " at competitive prices ".

Wah Chang's new zirconium plant at Albany, Oregon, which was formally opened in April, has been making deliveries since early this year. It was built at the company's own expense and is not government financed. Wah Chang also operates for the U.S. Government a zirconium plant in Oregon, which was formerly a Bureau of Mines facility. It has a capacity of about 150 s.tons per year. The company has not indicated the annual capacity of the new plant, but it is believed to be in the region of 100 s.tons per year.

Wah Chang is the second U.S. company to go into the production of zirconium. The leading producer is the Carborundum Metals Co., a subsidiary of the Carborundum Company. Other U.S. companies concerned with zirconium are National Distillers Products Corporation and the National Research Corporation. A number of other firms are interested in the production or fabrication of the metal.

Plans for an increase in production capacity at the new zirconium plant being built in Ashtabula, Ohio, by the National Distillers Products Corporation were recently reported. The original planned capacity of 750 s.tons has been revised to 100 tons because of growing needs.

According to Mr. N. C. Bartholomew, vice-president of Carborundum, " zirconium, with its outstanding resistance to the wide variety of highly corrosion reactants, can be both useful and economical in an existing chemical process and in those planned for future construction. With zirconium it may now be practical for the engineer to introduce a new process, hitherto impossible, due to the unavailability of a metal capable of withstanding the corrosive conditions encountered ".

Zirconium is, of course, an ideal metal for nuclear reactors. An outstanding example of its use in an atomic reactor, other than the pressurized water type, is in the sodium-cooled graphite reactor. Here zirconium was selected to protect the graphite moderator from penetration by the liquid sodium coolant, without sacrificing thermal neutron economy.

Zirconium metal is following the traditional price curve of metals under development. According to General Clinton D. Robinson, president of the Carborundum Corporation, its downward price swing has been especially steep. Carborundum's production, which is now 162.5 s.tons annually, is being sold to the Atomic Energy Commission at a price of $12.50 per lb. against $15 last year. This company will have a new plant in Parkersburg, West Virginia, in production by September with an annual capacity of 600 s.tons and the price will be further reduced to $7.50 per lb.

Thus far the commercial market for zirconium metal has been on a minor scale, but areas for considerable commercial development are reported to be indicated. Zirconium boride is regarded as a good candidate for rocket combustion chambers, because it can endure temperatures up to 6,000 deg. F.

Japan's output of zirconium is to be expanded to an annual level of 510 tons by the end of March, 1959.

WORLD'S LITHIUM RESOURCES

Two articles by C. K. G. Lamming, entitled " World Lithium Resources " and " Lithium Resources of the Western Hemisphere ", which appeared in our issues of September 21 and 28, 1956, are the subject of comment by Mr. W. B. Mather, Chairman, Mineral Technology Department, Southwest Research Institute, 8500 Culebra Road, San Antonio 6, Texas, who writes as follows :

" During the past 18 years I have examined most of the known lithium deposits in Canada, the U.S. and Brazil. My remarks here specifically apply to the latter two countries.

" Under the sub-heading ' U.S. Resources ' the following statement is made : ' The largest reserves are in the tin/spodumene pegmatite belt which crosses the North and South Carolina border '. This is in error, since the largest lithium reserves are in Searle's Lake, California. Indicated reserves (1955) in pegmatites in the U.S. are 5,000,000 units consisting of 20 lb. of Li_2O. The bulk of this is in the Carolinas. Reserves in Searle's Lake, California, are of the order of 9,000,000 units.

" The article also mentions a thickness of one deposit in the King's Mountain District, North Carolina, as 225 ft. At several locations the thickness is in excess of 300 ft.

" I have recently examined every known lithium deposit in Brazil. I did not hear the rumour or find ' large deposits of lepidolite ' in that country. Lithium mineralization in north-east Brazil consists almost entirely of spodumene with minor amounts of amblygonite. In 1953, amblygonite was mined from a pegmatitte about 40 ks. from the city of Sao Paulo.

" The points presented above are relatively minor when one considers the wide scope of the two papers. My only object in writing to you is to clarify the record in future discussions of this subject. The author has performed an excellent job of assembling data on a most important mineral commodity."

" As Mr. Mather points out," writes Mr. Lamming in reply, " the largest resources of lithium in the U.S. are contained in the brines of Searle's Lake, California, and I am grateful to him for the revised thickness of deposits in the King's Mountain District of North Carolina.

" I was particularly pleased to learn that the rumour of large deposits of lepidolite is not confirmed by him after a recent investigation in Brazil, as this has been fairly persistent."

INDIAN MANGANESE EXPORTS

The Indian State Trading Corporation has suggested to manganese producers and exporters that a co-ordinated sales policy should be evolved to regulate the country's export trade in manganese. It has proposed that machinery should be set up, so that private exporters could negotiate on behalf of the corporation and vice versa. Private exporters would have to inform the corporation of all orders and enquiries received from foreign buyers. At present, exporters usually finance the mining companies in exchange for long-term contracts for the supply of ores. The corporation has announced that it is prepared to work out satisfactory financial arrangements with both exporters and miners.

India's reserves of manganese ore are estimated at about 112,000,000 tons, according to the Indian Bureau of Mines. Of this total 100,000,000 tons are situated in Madhya Pradesh.

★

A report that manganese ore deposits have been discovered in the Anomabu area of Ghana, about ten miles from the Cape Coast, is quoted by Barclays Bank D.C.O., which has 38 branches in Ghana. The Bank says that further prospecting to establish the extent of the deposit is expected to be carried out.

ALUMINIUM OUTPUT CUT

Anaconda Aluminium Co. will curtail its production of primary aluminium by 25 per cent by July 1. Its capacity is 5,000 tons a month. Output will be cut by 12½ per cent on June 1 and by another 12½ per cent on July 1. Mr. H. G. Satterthwaite, a company official, stated that there had been a gradual reduction in the consumption of aluminium in the U.S., with the result that the company had accumulated a heavy inventory.

★

The Prime Minister of Ghana, Dr. Kwame Nkrumah, told the National Assembly that his Government would do all in its power to bring the Volta River project into being, though it would mean " very real sacrifices " for the people. He recalled the recent announcement that Ghana had given permission to an American group of companies to make a rapid survey of the Volta project. The American group had suggested that it might be possible to finance the entire project. It had been given first refusal up to July 18 this year. This undertaking had been given without prejudice to the negotiations with the British Government, Aluminium Ltd., and British Aluminium.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

The general advance in prices which took place on the London Metal Exchange in the middle of last week has not been maintained and, except for tin, values have tended to recede to former levels. Whilst the tone of the copper and zinc markets is easier, lead and particularly tin have maintained a steadier appearance, which in the case of the latter lends support to the belief held in some quarters that the Buffer Stock is acquiring some metal on the open market. With trading in the past few days not quite so active as of late, turnovers have declined from the recent level.

RHO-ANGLO—R.S.T. PRICING PROPOSALS

Wednesday of this week saw the long-expected joint announcement by Rho-Anglo and R.S.T. regarding their proposed copper pricing arrangements. Details of the proposals have not been made public, but it would appear that the new scheme envisages the establishment of a Rhodesian price linked to the L.M.E. price but only adjusted at intervals to take account retrospectively of fluctuations in the market price.

The outcome of this proposal is, of course, dependent on the reaction of the U.K. fabricators who buy from these two groups. These fabricators are understood to have already in the past six months or so put up various suggestions to the producers for a more stabilized system of pricing. These were, presumably, unacceptable, and it is hardly likely that final agreement will be reached on the present proposals without further prolonged discussion.

Meanwhile, it is, perhaps pertinent to point out that while these new proposals are of themselves unlikely to affect the volume of metal going through the exchange, the price basis whatever its exact nature, is going to depend on the L.M.E. accurately reflecting world market values.

The one essential in this context is that enough metals should be sold on the L.M.E. to maintain an active market and thus ensure a more accurate, and incidentally a less volatile market price. Large tonnages are not required for this purpose and if both the Rhodesian producers are now prepared to accept L.M.E. prices as the basis on which to work, it must clearly be to their interest that this pricing mechanism should be as efficient as possible.

CAN PRODUCERS HOLD £240 LINE?

When dealings were resumed after the week-end it was immediately noticeable that the copper market was lacking the influential buyers of recent times, as a result of which the closing quotation showed a fall of fully £1 from those ruling on Friday evening. This buying support had become quite a regular feature on the market and it seemed clear that producer interests intended to endeavour to hold the open market price to about £240. It remains to be seen whether the withdrawal of this support is merely of a temporary nature, but if it is not and with little indication of any improvement in consumer demand, there would appear to be little to halt the downward trend in the immediate future.

The market is also entering the traditionally quiet holiday period and it must also be pointed out that the belief is still widespread that world production is still ahead of consumption, although recent figures do not show any appreciable rise in producers' stocks. Meanwhile, on the London Metal Exchange the contango has widened to about £1 per ton following a further increase in refined copper stocks in L.M.E. official warehouses of 575 tons for the week ending May 25th, so that stocks now stand at 7,547 tons.

In the States some Customs Smelters have reported an improvement in buying both from domestic quarters at 30 c. and for export account at about 29¼ c. The scrap copper market is steadier, reflecting a shortage of offerings and the price for No. 2 is currently 24¼ c. There has been no change in the producers' price from 32 c., although it is still suggested that a price cut could develop around June 1st. Figures recently issued, based on deliveries of fabricated products, show an increase in consumption of refined copper from 106,170 tons in March to 117,041 tons in April.

From Chile it is reported that there has been a complete close down of copper refining and smelting activities of small and medium mines in the Coquimbo Province, as the transport of ore from the mines to the smelters has been interrupted as a result of recent storm damage to roads and bridges.

RUSSIANS STILL SELLING TIN

Demand for tin is reported satisfactory, which has helped to maintain a steady market and although consumer interest in the U.S. is quiet, traders refer to an apparent floor price of 98 c., taking Buffer Stock considerations into account. A small backwardation persists in London although tin stocks in official warehouses as at May 25th showed an increase on the week of 212 tons and now total 1,763 tons.

In April, 6,348 tons were shipped from Malaya compared to 7,694 tons in March and 5,687 tons in April of last year. This brought the total shipments from January to April of this year to 24,943 tons, of which it is interesting to note that the U.K. received only 39 tons compared to 13,482 tons to the U.S.; 3,091 tons to Europe; 3,531 tons to British Possessions and 4,872 tons going to other unspecified countries.

Reference must also be made to the activities of the Russians in the international tin market. During 1956, 315 tons were imported into the U.K. and although none arrived in January or February this year 43 tons were imported in March. The Russian metal is regularly on offer in this country and on a larger scale on the Continent, and in fact a figure of 1,000 tons a month has been mentioned as the tonnage available for disposal. On Thursday morning the Eastern price was equivalent to £783 p.t.c.i.f. Europe.

REACTION TO WASHINGTON'S NEW LEAD-ZINC PLANS

The most important item of interest in the lead and zinc markets has been the announcement by the United States Administration of a new long-term minerals programme which will be sent to Congress this week. The main item in this aims at assisting the domestic lead and zinc producers by the introduction of a new import excise tax, the purpose of which is to stabilize the domestic lead price at 16 c. and zinc at 13½ c. This tax would be adjusted according to the market price and would rise as the price falls or go down as prices advance. Mining state representatives, however, have attacked the programme as being inadequate but at the same time admitted that the economy-minded Congress might not even go so far as the proposals suggested. Officials have also expressed some doubt that the plan will pass through Congress this session, indicating that extensive hearings are likely to be held without action being taken until next year.

Meanwhile, the U.S. Government last week gave domestic producers until May 24th to submit offers of lead and zinc for the strategic stockpile for delivery by June 15th, but so far there has been no indication concerning the extent to which the intake of these metals this month will exceed the small tonnages taken in recent months. In any case the authorities are not expected to buy all the metal offered by the domestic industry, which is believed to have been substantial.

A further announcement by the U.S. Department of Agriculture regarding the resumption of the barter programme makes it clear that certain restrictions will be imposed in order to exclude deals that might displace sales for dollars.

Following these announcements, there were signs at the end of last week of a slight improvement in consumer buying of lead both here and in the States, but buyers generally are still proceeding cautiously and it remains to be seen whether the better rate will be maintained.

Zinc demand for all grades has been disappointing and, although any advance in price might well bring some buyers into the market who have tended to defer their purchases as long as possible, consumers generally are likely to maintain a "wait-and-see" attitude until the outlook is somewhat clearer than at present.

It has been announced that the American Zinc, Lead and Smelting Co. plans to close "for an indefinite period" its zinc and lead mine at Picher, Oklahoma, from June 1st, owing to the impossibility of operating the property at a profit on present price levels for lead and zinc. There have also been unofficial reports that the Consolidated Mining and Smelting Co.'s lead and zinc mine at Tulsequah, British Colombia, would be closed because of lower zinc prices. On the other hand, Eagle Picher plan to resume work on June 3rd in Oklahoma, Missouri and Kansas, where operations have been at a standstill since April 29.

Closing prices and turnovers are given in the table on the opposite page.

LONDON METAL AND ORE PRICES, MAY 30, 1957

THE WEEK ON THE L.M.E.

	May 23 Buyers	May 23 Sellers	May 30 Buyers	May 30 Sellers
COPPER				
Cash	£239½	£239¾	£235¾	£236
Three months	£240	£240¼	£236¾	£237
Settlement	£239¾		£236	
Week's turnover	9,600 tons		5,025 tons	
LEAD				
Current ½ month	£98½	£99	£96¾	£97
Three months	£98¼	£98¾	£97¼	£97½
Week's turnover	2,750 tons		2,875 tons	
TIN				
Cash	£764½	£765	£763½	£764
Three months	£762½	£763	£761½	£762
Settlement	£765		£764	
Week's turnover	615 tons		410 tons	
ZINC				
Current ½ month	£85½	£86	£81	£81¼
Three months	£82½	£82¾	£79½	£79½
Week's turnover	6,650 tons		6,175 tons	

METAL PRICES

Aluminium, 99.5%, £197 per ton

Antimony —
- **English (99%)** delivered, 10 cwt. and over £210 per ton
- Crude (70%) £200 per ton
- Ore (60%) bases 23s. 6d./24s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton

Bismuth (min. 1 ton lots) 16s. lb. nom.

Cadmium 12s. 0d. lb.

Cerium (99% nett), £13 18s. lb. delivered U.K.

Chromium, Cr. 99% 7s. 2d. lb.

Cobalt, 16s.-19s. lb.

ORES AND OXIDES

Bismuth .. .. 65% 8s. 6d. lb. c.i.f. 20% 3s.3d. lb. c.i.f.

Chrome Ore—
- Rhodesian Metallurgical (semifriable) 48% .. .. £17 8s. 0d. per ton c.i.f.
- „ Hard Lumpy (45%) .. .. £17 8s. 0d. per ton c.i.f.
- „ Refractory 40% .. .. £12 15s. 0d. per ton c.i.f
- „ Smalls 42% .. .. £16 5s. 0d. per ton c.i.f.
- Baluchistan .. .. £18 15s. 0d. per ton c.i.f.

Columbite, 65% combined oxides, high grade .. .. 185s /197s. 6d. per unit

Fluorspar—
- Acid Grade, Flotated Material .. .. £22 13s. 3d. per ton ex. works
- Metallurgical (75/80% CaF_2) .. .. 156s. 0d. ex. works

Lithium Ore—
- Petalite min. 3½% Li_2O .. .. £8-£10 per ton f.o.b. Beira
- Lepidolite min. 3½% Li_2O .. .. £8-£10 per ton f.o.b. Beira
- Amblygonite basis 7% Li_2O .. .. £28-£32 per ton f.o.b. Beira

Magnesite, ground calcined .. .. £28 0s./£30 0s. d/d

Magnesite Raw (ground) .. .. £21 0s./£22 0s. d/d

Molybdenite (85% basis) .. .. 8s. 5d. nom. per lb. (f.o.b.)

Titanium Ore —
- Rutile 95/97% TiO_2 .. .. £61/£63 per ton c.i.f. Aust'n
- Ilmenite 52/54% TiO_2 .. .. £11 10s. per ton c.i.f. Malayan

Wolfram and Scheelite (65%) .. .. 150s./155s. per unit c.i.f.

Manganese Ore Indian
- Europe (46%-48%) basis 130s. freight plus 5% surcharge .. .. .. 131d nom. per unit c.i.f.

Manganese Ore (43%-45%) .. .. 106d. nom. per unit. c.i.f.

Manganese Ore (38%-40%) .. .. 100d. nom per unit. (including duty)

Vanadium —
- Fused oxide 90-95% V_2O_5) .. .. £12½-£13½ per unit c.i.f.

Zircon Sand (Australian) (65-66% ZrO_2) .. .. £20 per ton c.i.f.

Germanium, 99.99%, Ge. kilo lots 3s. 4d. per gram

Gold, 250s. 5d.

Iridium, £27/29 oz. nom.

Lanthanum (98/99%) 15s. per gram

Manganese Metal (96%-98%) £310

Magnesium, 2s. 5½d. lb.

Nickel, 99.5% (home trade) £600 per ton

Osmium, £20/22 oz. nom.

Osmiridium, nom.

Palladium, £8 0s./£8 10s. oz.

Platinum U.K. and Empire Refined £33 oz.
Imported £33 nom.

Quicksilver, £91 10s. ex-warehouse

Rhodium, £42 oz.

Ruthenium, £15/£17 oz. nom.

Selenium, 85s. nom. per lb.

Silver, 78½d. f. oz. spot and 78¼d. f'd.

Tellurium, 15s./16s. lb.

LONDON STOCK EXCHANGE PRICES, MAY 29, 1957

Finance	Price May 29	+ or — on week
African & European	52/6	.....
Anglo American Corpn.	5⅞	.....
Anglo-French	22/6	+3d
Anglo-Transvaal Cons.	27/6	.....
Central Mining (£1 shrs)	70/7½	+3/9
Consolidated G'fields	51/3	—1/3
Consol. Mines Selection	30/-	.....
East Rand Consols	1/9	+3d
General Mining	51/10½	+7½
H. E. Prop.	7/10½	—1½d
Johnnies	40/7½	—4½d
Rand Mines	70/-	—1/3
Rand Selection	33/1½	+7½d
Union Corporation	36/3	—1/-
Vereeniging Estates	4 1/16	—1/16
Writs	35/3	+9d
West Wits.	30/-	.....
Rand Gold		
Blyvoors	19/-	.....
Brakpan	4/10½	.....
Buffelsfontein	30/-	+3d
City Deep	11/9	+1½d
Consol. Main Reef	13/1½	+4½d
Crown	23/-	.....
Daggas	30/4½	+1/-
Dominion Reefs	16/4½	—4½d
Doornfontein	19/9	.....
Durban Deep	22/3	+1/-
E. Champs	2/6	.....
E. Daggas	7/6	+3d
E. Geduld (4s. units)	26/-	.....
E. Rand Props.	36/9	—9d
Geduld	65/-	—1/3
Govt. Areas	3/6	.....
Grootvlei	15/-	+7½d
Hartebeestfontein	46/6	+4½d
Libanon	6/-	.....
Luipaards Vlei	13/-	.....
Marievale	17/4½	.....
New Kleinfontein	3/3	+3d
New Pioneer	17/7½	+4½d
Randfontein	30/-	+3d
Robinson Deep	7/3	+3d
Rose Deep	8/6	.....
Simmer & Jack	3/6	—1½d
S.A. Lands	22/6	—6d
Springs	1/10½	—1½d
Stilfontein	25/9	+3d
Sub Nigel	17/-	—1/-
Vaal Reefs	29/10½	—4½d
Van Dyk	3/-	.....
Venterspost	11/9	.....
Vlakfontein	13/9	.....
Vogelstruisbult	12/6	+3d
West Driefontein	4 1/16	.....
Rand Gold contd.		
W. Rand Consolidated	29/9	+3d
Western Reefs	26/10½	—3d
O.F.S. Gold		
Freddies	4/7½	—4½d
Freddies Consolidated	3/4½	—1½d
F.S. Geduld	57/6	—1/3
Geoffries	2/7½	.....
Harmony	19/3	+9d
Loraine	3/10½	—1½d
Lydenburg Estates	11/3	.....
Merriespruit	4/-	+1½d
Middle Wits	8/3	—6d
Ofsits	46/6	—1/6
President Brand	46/-	.....
President Steyn	23/9	—6d
St. Helena	21/9	.....
Virginia Ord.	9/9	—3d
Welkom	14/6	—3d
Western Holdings	58/9	—1/3
West African Gold		
Amalgamated Banket	-/11½	—2d
Ariston	3/10½	.....
Ashanti	20/9	+3d
Bibiani	2/7½	.....
Bremang	1/3	.....
Ghana M.R.	1/10½	.....
Kononga	1/6	.....
Marlu	-/0½	.....
Taquah	4½xd	+1½d
Western Selection	5/1½	—1½d
Australian Gold		
Gold Mines of Kalgoorlie	12/9	+3d
Great Boulder Prop.	12/3	+1½d
Lake View & Star	19/4½	—4½d
Mount Morgan	12/9	—3d
North Kalgurli	7/6	.....
Sons of Gwalia	1/9	.....
Western Mining	9/1½	+4½d
Miscellaneous Gold		
Cam & Motor	8/-	+3d
Champion Reef	6d	.....
Falcon Mines	7/9	—1½d
Globe & Phoenix	24/6	.....
Motapa	10½d	.....
Mysore	3d	.....
Nundydroog	6d	.....
St. John d'el Rey	56/-	+4/9
Zams	54/4½xd	—10½d
Diamonds and Platinum		
Anglo American Inv.	8½	—1/16
Casts.	27/7½xd	+6d
Cons. Diam. Pref. of S.W.A.	10/9	.....
De Beers Defd. Regd.	4 1/16	—1/16
De Beers Pfd. Regd.	13½	.....
Pots. Platinum	14/10½	—1½d
Waterval	25/3	—4½d
Copper		
Bancroft	36/3	—1/6
Chartered	70/6	—3/6
Esperanza	2/4½	+1½d
Magundi	8/6	—3d
Messina	8 1/16	.....
Nchanga	11 1/16	—1/16
Rhod. Anglo-American	92/-	—3/6
Rhod. Katanga	34/-	.....
Rhodesian Selection	20/3 xd	—7½d
Rhokana	36	—1½
Rio Tinto	4 1/16	+ 1/16
Roan Antelope	11/- xd	—4½d
Selection Trust	4 1/16	+ 1/16
Tanks	8 1/16	+ 1/16
Tharsis Sulphur Br.	4½	+ ⅛
Tin (Eastern)		
Ayer Hitam	25/-	—3d
Gopeng	17/3 xd	—4½d
Hongkong	6/7½	.....
Ipoh	16/6	—3d
Kamunting	11/9	.....
Kepong Dredging	4/3 xrc	+3d
Kinta Tin Mines	28/3	.....
Malayan Dredging	16/10½	—9d
Pahang	17/1½	—6d
Pengkalen	19/6xd	+3d
Petaling	6/6	—1½d
Rambutan	20/-	.....
Siamese Tin	15/4½xd	+6d
Southern Kinta	21/4½	—3d
S. Malayan	11/9	.....
S. Tronoh	9/1½	+3d
Sungei Kinta	22/3	+3d
Tekka Taiping	9/6	.....
Tronoh	14/3	+1½d
Tin (Nigerian and Miscellaneous)		
Amalgamated Tin	11/-	—1½d
Beralt Tin	47/6	—6d
Bisichi	4/9 xd	—3d
British Tin Inv.	25/-	—1/-
Ex-Lands Nigeria	2/6 xd	.....
Geevor Tin	17/3	—6d
Tin (Nigerian and Miscellaneous) contd.		
Gold & Base Metal	1/7½	.....
Jantar Nigeria	4/4½	—1½d
Jos Tin Area	15/3	.....
Kaduna Prospectors	2/-	.....
Kaduna Syndicate	2/6	.....
London Tin	12/3	—6d
United Tin	10½d	.....
Silver, Lead, Zinc		
Broken Hill South	70/6	+1/9
Burma Mines	3/6	.....
Consol. Zinc	78/9	+3/6
Lake George	8/3	—6d
Mount Isa	27/9	+3d
New Broken Hill	48/-	+3d
North Broken Hill	5½	.....
Rhodesian Broken Hill	10/10½	—7½d
San Francisco Mines	25/-	+6d
Uruwira	3/1½	+1½d
Miscellaneous		
Base Metals and Coal		
Amal. Collieries of S.A.	2 3/16	—1/16
Associated Manganese	40/6	+3/-
Cape Asbestos	11/6	.....
C.P. Manganese	23/9xd	—1/6
Consol. Murchison	48/9	—7½d
Natal Navigation	3 3/16	—1/16
Turner & Newall	134/6	—3/-
Wankie	18/3	.....
Witbank Colliery	5¼	+⅛
Canadian Mines		
Dome	$26	—½
Hollinger	$64½	+½
Hudson Bay Mining	$134	—3
International Nickel	$215	—4
Mining Corpn. of Canada	£6¾ xd	.....
Noranda	$103	+1
Quemont	£5¾	+¼
Yukon	4/10½	.....
Oil		
Apex	59/8	—3d
Attock	51/6	+2/6
British Petroleum	163/1½	+3/1½
Burmah	113/9	+1/3
Canadian Eagle	84/3	+6d
Mexican Eagle	20/7½	.....
Shell	192/10½	+4/10½
T.P.D.	91/10½	+1/10½
Ultramar	73/9	—4/6

Mining Finance

An Attempt To Corner The "Corner House"

For some time past, the name of Mr. Sam Glazer has been in one way or another associated in the background with the advance in Central Mining ordinary shares to a peak this year of 75s. That, at any rate, has been the idea of the market. As we reported and commented upon last week, a very powerful group, including Messrs. Engelhard and Richdale of New York on the one hand, together with Anglo American and Union Corporation with the bankers Rothschild and Sons, J. Henry Schroeder and Robert Benson Lonsdale on the other, had already announced their acquisition of 80 per cent of the preference share capital of Central Mining besides a "substantial" participation in the ordinary. By common consent, this consortium, as we suggested a week ago, fairly well settled any question of other "outside" interests attempting to acquire control of what, since the Trinidad Oil deal, might well appear to have been an attractive proposition.

There came on Friday evening of last week a sudden move from the Glazer brothers of Johannesburg with their snap announcement that they were prepared to make cash offers for Central Mining preference and ordinary shares at 30s. and £5 per share respectively. At this time, market prices were 24s. for the preference and 64s. 6d. for the ordinary.

Mr. Glazer being in London proves nothing. His first shot was to say that he was prepared to make the offer already mentioned subject to so many assurances from Central Mining that his bids do not as yet amount to bids at all, but merely ideas of the sort of thing Glazers would like to do, given the complete acquiescence of people like Messrs. Engelhard and Richdale in America and Sir Ernest Oppenheimer leading South African and U.K. interests. With the best will in the world, it is difficult to see where this is likely to get him. Mr. Glazer claims that he holds 10 per cent of the ordinary capital. The exact figures are not known, and probably will remain so, but our guess is that in voting power, even in the modified form which came up for sanction this week, the consortium Engelhard, Richdale, Anglo American and the rest, can effectively outvote this outside interest.

In any event, even if this were not so, the changes in the Corporation's Articles of Association which seem virtually certain to have been approved at yesterday's extraordinary general meeting (the result of the poll will be announced this morning), provide the Corporation with a further 4,000,000 unissued ordinary shares with which to combat any further bid for control.

The fact remains that Glazer Brothers have said that, subject to certain conditions, they are prepared to bid £5 per share for Central Mining ordinary shares, subject to a minimum of 66 per cent on the assumption that the new voting rights, *vis-à-vis* the ordinary and preference, become fact. Many shares in Central Mining (perhaps as much as 50 per cent of the ordinary) are held on the Continent, and as such are disenfranchised.

Therefore to get 66 per cent control, or anything approaching that figure, whatever firm offer may be made, would appear to be substantially a matter of coaxing out a lot of stock from the Continent and putting it into U.K. hands, where it may have a voting right. At this writing it remains to be seen whether Glazer Brothers do in fact make a firm offer at the bid prices already mentioned.

The odds being laid about this coming off may be measured against the behaviour of Central Mining shares during the past week. After the "consortium" news the previous week the shares fell sharply to around 64s. 6d. On Monday morning, with the Glazer offer over the week-end to ponder about, dealers opened the price up at 75s. nominal. The shares have since slipped back to the 70s. mark. With a £5 bid being bandied about this hardly suggests that there exist much confidence as yet that the bid will, in fact, be made.

Should it fall through, as many quarters seem to think likely, it is difficult to see why Central Mining shares should be standing even at 70s. or anywhere near it. After the Trinidad Oil news, the market and investment quarters generally appeared quite content to see the price no higher than 55s.

The final points in this saga may be made. The first is that the favourable net cash element in the Central Mining position may have been considerably exaggerated; and the second, that any bid would in the last analysis require U.K. Treasury consent which some knowledgable quarters, at any rate, feel would not be easily forthcoming.

ANGLO AMERICAN REPORT

The mammoth annual report of Anglo American Corporation of South Africa, which runs to as many as 104 pages, could easily claim credit as a monthly glossy. Colour and half-tone photographs, maps, graphs, tables and the like, together with the Board's extensive review, combine to make the document a widely ranging review of gold, uranium, diamond, coal and copper mining activities during the past year in Africa south of the Equator. Although often identified primarily with gold mining, Anglo American is, of course, largely interested in all these other mining fields which in recent years have been creating so much wealth for Capricorn and Southern Africa. Those reading the latest report cannot at the end but be much better informed about the past year's developments in these direction.

So far as concerns the corporation itself, the past year's results have matched fairly closely the experience of other Rand mining houses in terms of earnings. As is commented on in connection with General Mining in another note, Kaffir market conditions last year, continuing the pattern established in 1955, were not conducive to profitable share operations on the part of the mining finance houses. In this context, Anglo American appears to have suffered more severely than some of the other groups. Owing to unfavourable market conditions, it is stated, opportunities for the advantageous realization of investments were "severely" restricted. In consequence, the group's surplus derived from this source during 1956 was insufficient to cover the amount applied to the writing down of investments in accordance with normal policy. The net result from this side of the corporation's business last year was, in fact, a group deficit of £566,000 compared with a surplus of £294,000 in 1955. There might be something to be learned here for the ill-informed who from time to time suggests that the mining houses "run the market."

Anglo American's overall experience last year, however, has again given cause for satisfaction, for although there was a loss on share-dealings, other income continued to advance to the extent that group revenue was £8,300,000 against barely £8,100,000. Untaxed profits were lower at just over £5,000,000 against £6,200,000, a larger bill being incurred for interest payments in accordance with the higher rates generally prevailing, while in 1955 there was a non-recurring item bringing in a "substantial" special profit as the result of the Preference share scrip issue by the associated diamond company, Anglo American Investment Trust.

Anglo has, in the past decade, found and sunk a lot of capital into many new mining ventures in Africa, of which even now some have not reached the dividend stage. Many others have an expansionary prospect before them. Lower dividend income this year must be expected to accrue from the important copper investments. This, however, may well be offset by the growing dividends which are likely to come from the younger mines in the O.F.S. and Far West Rand. And here again, a Kaffir market revival could be of great significance in the earnings picture. As recently as 1954 net revenue from this source reached £967,000.

MIDDLE WITS

In the busier Kaffir market seen a year or two ago, the shares of Middle Witwatersrand (Western Areas), which comes under the cloak of Mr. S. G. Menell's Anglo-Transvaal Investment group, were among the speculator's favourites. The shares have come back in common with all others, although here it is important to emphasize that they have gone "ex rights" in respect of several participations in other companies at par. The latest accounts suggest that the earnings situation of what is still primarily a development and prospecting undertaking is better than may be generally realized. Middle Wits itself last year obtained a profit of £124,000 against £199,000 before tax in 1955. The group accounts, how-

ever, show an untaxed profit of £436,000, against £584,000, here again the reduction being attributable to less favourable markets. The latest balance sheet gives quoted investments at £2,795,000 having an ex-dividend market value of £4,974,000. As of April 30 last, says the chairman, there was an excess of market values over book figures of £2,165,000.

The company was associated with the Riebeeck Gold flotation last year, and the participation in this as well as in Zandpan Gold and other prospecting ventures, has been financed out of current profits and resources without needing the disposal of investments to any considerable extent. Middle Wits' gold mining interests are mainly in the Virginia group of mines in the O.F.S. and in those operating in the Klerksdorp district of the Transvaal.

Additional interests, however, have been taken with other companies in a number of base mineral prospects in Southern and Northern Rhodesia, included among which are ten-year rights over the 10,000 sq. mile concession of North Charterland in Northern Rhodesia. This large area, currently the scene of prospecting, has copper and other prospects. Further interests are held in Southern Rhodesia where there have been chrome, copper, nickel, and lithium indications. Although Middle Wits' shares must still be expected to fluctuate mainly in accordance with the behaviour of the Kaffir market generally, it is worth while remembering its interests outside this field. A full report of the chairman's statement to shareholders appears on page 698.

GENERAL MINING DECLARES LOWER DIVIDEND

For a matter of some twenty years, shareholders in General Mining and Finance Corporation have been receiving an annual dividend of 25 per cent on the £1 Ordinary shares. Thus, it came as no small surprise in April to learn that the final dividend for 1956 was to be only 10 per cent, bringing the year's total up to 20 per cent. The accounts now show that the usual dividend from this long-established Rand finance house could, in fact, have been maintained so far as the year's earnings are concerned, the decision to make a cut being entirely a matter of policy in the light of the corporation's prospective commitments, coupled, perhaps, with the immediate outlook for the gold share market.

In this context, some significant statements find expression in the directors' report accompanying the full accounts this week. The gold mining industry in South Africa, it is emphasized, has again given a wonderfully good account of itself with a new record production worth £197,000,000 last year. In addition, uranium production from the gold-uranium producers in the Union rose further so that working profits from this source during the year advanced to £26,700,000, against the £17,500,000 achieved in 1955. And despite many continuing handicaps, as much as 3,300,000 oz., valued at around £42,000,000, were produced by no fewer than 17 mines in the Transvaal operating at a profit margin of less than 5s. per ton milled or, in a few instances, even at a loss. But despite the performance of the mining industry—and, indeed, of South African exports as a whole, which reached the record figure of £402,000,000 last year—a "disturbing feature" was the almost complete cessation of the traditional inflow of capital funds to the Union.

Last year there was an adverse balance with the outside world on capital account of the order of £2,000,000. The General Mining directors emphasize that "this trend must inevitably affect adversely development in all spheres of national activity and particularly in the case of mining, where no enterprise of any consequence can be initiated without the employment of risk capital on a substantial scale".

Apart from the broader implications of this trend, which has been increasingly evident in the past few years and which is commonly laid at the door of South African politics, the Rand mining finance houses themselves have accordingly found operating conditions more difficult. Profits on the realization of shares have always been a traditional source of considerable income. Recent accounts of the mining finance houses have shown the great extent to which this revenue factor has been dwindling. Out of a total income of £1,300,000 obtained by General Mining last year, a mere £6,000 came from share-transactions. Net profits amounted to £975,000, against £906,000, which clearly would have allowed the maintenance of the dividend. Instead, £293,000 was appropriated out of profits for the writing down of investments.

A year ago the chairman warned of the need to reconsider the corporation's financial position. It is now disclosed that during the past year arrangements were concluded with Anglo American Corporation of South Africa whereby Anglo has made available loan facilities repayable at the latest by the end of 1959. As at the end of last year, half this amount had been drawn.

General Mining's dividend income has been steadily growing and again advanced sharply last year, and this trend may be expected to continue, bearing in mind the big interests held in many of the young and growing mines in the Western Transvaal and Orange Free State. A revival in the Kaffir market would, of course, bring tangibly better opportunities for profitable share dealings. Meanwhile, it was no mean achievement that profits, in fact, did advance last year despite the Kaffir market.

FINANCIAL NEWS AND RESULTS IN BRIEF

East Rand Pays Maiden.—Preliminary figures for East Rand Consolidated show an improvement in profits to £58,237 after tax (£45,562). A maiden dividend of 1½d. absorbed £21,562 and after a transfer to Investment Reserve of £25,000 and the writing of £29,910 off Quoted Investments, the balance unappropriated was £22,613. Meeting, London, July 18.

Tekka-Taiping Limited.—Tekka-Taiping's first report since becoming a subsidiary of Camp Bird shows substantially higher profits of £74,631, against £13,285. No dividend is recommended but a capital repayment of 5s. per share was made in July. Net current assets at October 31 were £194,825, with investments written down to their current values. Meeting, London, June 18. Chairman: Mr. John Dagleish.

Taquah and Abosso Mines.—The liquidators of Taquah and Abosso Mines announce that a second distribution of 1s. per share will be made on June 28.

Cape Asbestos Set New Record.—At £1,707,540, Cape Asbestos' Group trading profits established a new record. Net profits were also higher at £562,731, and the dividend is raised to 15 per cent from 12½ per cent. Net current assets at December 31, 1956, were £3,413,177, while reserves and surplus stood at £4,062,472. Meeting, London, June 12. Chairman, Mr. R. Walker.

Selection Trust Makes Bonus Issue.—Although profit on investment realization almost disappeared in the year to March 31, 1957 (£2,290 against £94,613 in 1956), Selection Trust's profits after tax showed a substantial increase from £1,433,322 to £2,221,878. The dividends and interest moved up to £4,534,811 against £2,920,024. A final dividend of 5s. 3d. making 7s. for the year is recommended, absorbing £746,309 and the carry forward, after placing £1,000,000 to General Reserve rises to £664,260. Expenditure on exploration during the year was £133,279. It is proposed to capitalise £123,612 of the share premium account and to issue 247,224 new 10s. shares from the proceeds in the proportion of one new for 20 held. Meeting, London, July 11. The Chairman is Mr. A. Chester Beatty.

N.V. Billiton Maatschappij.—Billiton Tin's 1956 profits were Fl. 2,300,000 better at Fl. 7,900,000. It is announced that a subsidiary, Mbeya Exploration Company of Tanganyika, has found over 45,000,000 tons of columbium reserves. Billiton has also obtained a 60 per cent interest in Nigadoo Mines, a Canadian lead and zinc company. The dividend is maintained at 20 per cent on the first series shares and 15 per cent on the second series.

A Bonus From Ultramar.—Preliminary figures for the Ultramar Group show improved consolidated profits at £604,054 (1955, £483,005), of which £357,225 (same) is transferred to an amortization reserve. Additionally, S.A.P. Las Mercedes, in which Ultramar has a 50 per cent interest, earned a net income of $1,877,096. The Ultramar directors recommend a capital surplus distribution of 1s. per 10s. stock unit. Meeting, London, July 8.

Mason and Barry Has Thin Year.—1956 figures for Mason and Barry reveal a drop in profits of £60,961 to £20,351 after all charges. In arriving at the taxation figure of £41,583, however, no account has been taken of the Overseas Trade Corporation proposals. The dividend recommended moves down to 10 per cent (15 per cent last year), and the bonus is reduced to 5 per cent (15 per cent).

Siamese Tin Syndicate.—At £324,905 after tax, 1956 profits of Siamese Tin were 60 per cent up on 1955. The final dividend is boosted to 27½ per cent absorbing £86,399 while the carry-forward increases to £96,004. Net liquid assets at December 31, 1956, were slightly lower at £809,000. Meeting, London, June 27. Mr. R. S. G. Scott is chairman.

MIDDLE WITWATERSRAND (WESTERN AREAS) LIMITED

(Incorporated in the Union of South Africa)

MR. S. G. MENELL'S REVIEW OF ACTIVITIES

The annual general meeting of Middle Witwatersrand (Western Areas) Limited will be held in Anglovaal House, 71 Fox Street, Johannesburg, on June 24, 1957, at 11.00 a.m. The following review by the chairman, **Mr. S. G. Menell**, accompanies the annual report and accounts for the year ended December 31, 1956 :—

"The flotation of the Riebeeck Gold Mining Company Limited during the past year marked the culmination of your company's pioneering work in prospecting and developing the Sand River and van den Heeversrust areas in the Orange Free State As a result of this work and the active prospecting work carried out by your company in the Klerksdorp area substantial interests have been obtained in seven mining companies in these areas. In addition your directors were able to arrange for offers of shares to be made to members of your company in respect of six of the flotations.

Your company has become interested, with other companies, in a number of base mineral prospects in Southern and Northern Rhodesia. Included among these are rights for a ten-year period over the 10,000 square mile North Charterland Concession incorporating copper and other prospects in the Fort Jameson area of Northern Rhodesia, as well as chrome, copper, nickel and lithium prospects in Southern Rhodesia. Active prospecting work in the Central African Federation is being conducted through Anglovaal Rhodesian Exploration (Pvt.) Limited which has its headquarters in Salisbury.

In my review last year it was stated that the profit of £199,198 earned in 1955 arose mainly out of the realization of certain investments. This step had been necessary in order to finance your company's participation in the initial capital of Free State Saaiplaas Gold Mining Company Limited and the exercise of its options over additional shares in the Hartebeestfontein and Buffelsfontein Gold Mining Companies. This year we have financed our participations in Riebeeck Gold Mining Company Limited, in Zandpan Gold Mining Company Limited and in various prospecting ventures out of current profits and resources without resorting to the disposal of investments to any large extent.

The balance sheet at December 31, 1956, now submitted, reveals that **Quoted Investments** which cost £2,795,193, had an "ex-dividend" market value at that date of £4,974,198, an excess over cost of approximately £2,179,000. At April 30, 1957, the excess of the market price over the book value was £2,164,800. This was satisfactory in view of the conditions prevailing.

Unquoted Investments are shown on the balance sheet at £116,807 compared with £36,116 in the previous year. The increase is mainly accounted for by our acquisition of shares in Zandpan Gold Mining Company Limited and in Anglovaal Charterland Exploration Company Limited, the company formed to prospect the North Charterland Concession in Northern Rhodesia.

Progress of Principal Companies

The following are brief details of the progress achieved by the principal companies in which your company retains substantial shareholdings :—

At the **Hartebeestfontein Mine** satisfactory progress has been made. The monthly rate of gold production has been increased from 44,000 tons at a recovery grade of 6.704 dwt per ton in July 1955 (when production commenced), to 85,000 tons at a recovery grade of 10.700 dwt per ton in March 1957. Uranium production was commenced in November 1956. A maiden dividend of 1s. per share was declared in June 1956 and dividend No. 2 of 1s. 6d. per share in December 1956. Two new shafts are being sunk to the Vaal Reef in the deeper north-western portion of the mine. The capital expenditure which will be incurred in sinking and equipping these shafts and a 14 foot diameter unlined ventilation shaft, as well as in the provision of additional equipment and services for an increased scale of operations, is estimated to be £6,000,000. This expenditure will be spread over the next four years and will be financed from the company's own resources. During this period it is anticipated that it will be possible to appropriate the necessary funds from profits to meet this capital expenditure programme to repay loans on due date and to make reasonable dividend distributions to shareholders. During the quarter ended March 31, 1957, 245,000 tons were milled at a recovery grade of 10.455 dwt per ton and 300,000 tons of slime were treated for uranium oxide at a recovery grade of 0.734 lb per ton. During that quarter the working profit from gold production, including sundry mining revenue, was £802,459 and the estimated profit from uranium production was £593,051, making a total of £1,395,510.

At the **Virginia Mine** during the financial year ended December 31, 1956, the tonnage milled amounted to 1,016,000 tons at a recovery grade of 4.600 dwt per ton and the tonnage treated for uranium oxide amounted to 1,479,374 tons at a recovery grade of 0.404 lb per ton. The working profit from all operations for the year amounted to £2,110,264 (subject to adjustment) of which £288,842 was derived from acid production and £1,334,051 (subject to adjustment) from uranium production. The capacity of the reduction plant has been increased to 108,000 tons per month and further extensions are in progress. Extensions to the uranium plant to provide a capacity of 130,000 tons per month were completed early in 1956. During the quarter ended March 31, 1957, 288,000 tons were milled at a recovery grade of 5.317 dwt per ton and 397,654 tons of slime were treated for uranium oxide at a recovery grade of 0.507 lb. per ton. During that quarter the working profit from gold production, including sundry mining revenue, was £199,013 and, in addition, an estimated profit of £587,269 accrued from uranium and acid production, making a total of £786,282.

At the **Merriespruit Mine** official production was commenced during March, 1956, the milling rate of 75,000 tons per month being equal to the capacity of the reduction plant. Inrushes of water during October, 1956, flooded the mine and all mining operations ceased. Baling operations were carried out at No. 1 and No. 2 shafts in order to obtain information on which decisions were made regarding the methods to be employed for dewatering the mine. A two-stage programme for bringing the mine back into production has now been proposed. The first stage, involving some development work and the dewatering of the mine, both to be carried out from the neighbouring Virginia mine, will commence shortly. The estimated cost of this first stage is £1,200,000. This finance has been obtained by the sale of the housing owned by the company, which has retained the right to lease housing from the purchaser (Virginia Land and Estate Company Limited) for its requirements. When the first stage has been completed the Consulting Engineers will be in a position to make their recommendations as to the second stage.

At **New Klerksdorp Gold Estates Limited** during the quarter ended March 31, 1957, after taking into account the profit from uranium production estimated at £28,500, and the £15,475 loss on gold production, operations resulted in a working profit of £13,025.

At the **Riebeeck Mine** work is progressing on the concrete headgear and collar of No. 1 shaft and arrangements have been made for compressed air, electric power and water supplies. On March 31, 1957, the twin haulage from No. 2 shaft of the Loraine Gold Mine had reached a position approximately 2,400 feet from the point where it will reach the Riebeeck property.

At the **Stilfontein Mine** the ore reserve at December 31, 1956, was estimated at 4,286,000 tons having an average gold value of 9.54 dwt per ton and an average uranium oxide content of 0.304 lb per ton over a stoping width of 38.1 inches. Working profit from all operations has increased from £742,398 for the quarter ended December 31, 1955, to £950,633 for the quarter ended March 31, 1957.

At the **Buffelsfontein Mine** the reduction plant, which has a capacity of 100,000 tons per month, was completed and trial milling commenced during November 1956. During the year ended December 31, 1956, 13,410 feet of development had been sampled, all of which proved payable. Official production was commenced in January 1957 when 80,000 tons were milled at a recovery grade of 5.25 dwt per ton. During the quarter ended March 31, 1957, 261,000 tons were milled at a recovery grade of 5.610 dwt per ton, and the working profit including sundry revenue was £247,337. The construction of the uranium plant is proceeding satisfactorily. The Atomic Energy Board has approved the construction of a pyrite recovery plant and a sulphuric acid plant, each with a capacity of 100 tons daily.

At the **Free State Saaiplaas Mine** good progress is being achieved on the sinking of No. 1 and No. 2 vertical shafts and on the erection of plant and buildings.

The drilling of boreholes Z5, Z6 and Z7 by **Zandpan Gold Mining Company Limited** on farm Zandpan No. 43 in the Klerksdorp district of the Transvaal was completed during the year. Boreholes Z5 and Z6 intersected the Vaal Reef at borehole depths of approximately 7,210 feet and 7,419 feet respectively. Borehole Z7 encountered severely faulted ground and was abandoned after reaching a depth of 7,263 feet in Witwatersrand Sediments below the horizon of the Vaal Reef. Although no exposure of Vaal Reef suitable for sampling was ob-

tained, it was established that this horizon lies at a borehole depth of approximately 6,940 feet. The attention of members is drawn to an announcement made in the press by the Zandpan Company on November 6, 1956, indicating that the published results of boreholes Z5 and Z6 were to be regarded as unreliable. The matter is still under investigation.

Since the close of the financial year we have acquired further shares in our subsidiary company. **Virginia Land & Estate Company Limited,** which during the year under review made a net profit of £242,578 before providing for taxation. It has now sold residential, industrial and business sites in Virginia to the value of over £1,500,000. Branches of many leading commercial firms have been established in the town. Since the flooding of the Merriespruit mine, one of the four mines served by the town, the demand for stands has fallen off but is expected to revive in due course. The company also owns or is very substantially interested in buildings in Virginia to the value of approximately £400,000 and in addition has recently acquired a large block of housing from the Merriespruit (Orange Free State) Gold Mining Company Limited. This housing which consists of 432 houses, a block of flats and 12 vacant stands was acquired for £1,700,000, of which £1,200,000 is payable over twelve months, and £500,000 is payable when the Merriespruit mine resumes normal production. Of the finance required for this transaction £1,150,000 has been obtained by raising mortgage bonds and these bonds have been guaranteed by Anglo-Transvaal Consolidated Investment Company Limited and by your company. These houses will be leased to private individuals and mining companies in the area, and it has been agreed that the Merriespruit Company will have the right to lease such housing as it may from time to time require. It is anticipated that this will bring in a satisfactory return. In conclusion I desire to place on record your Board's appreciation of the services rendered by our secretaries and technical advisers, Anglo-Transvaal Consolidated Investment Company, Limited, both at the head and London offices, and also by the managers and staffs of our subsidiary companies."

SOUTH CROFTY, LTD.

The fifty-first annual general meeting of South Crofty, Ltd., was held on May 22, at Pool, Redruth, Cornwall.

Mr. T. Pryor, D.S.O., M.I.M.M., Chairman, presided, and following is an extract from his circulated Statement:—

Results for the year ended December 31, 1956, show that gross receipts from sales of all products realized £17,250 more than in 1955, but the working profit declined by £17,827 because working costs were £30,925 more than in the year before, whilst there was no dividend from Great Western Ores Ltd., whereas £5,250 was received from this source in 1955. The increased working costs for 1956 are due to the much larger footage of underground exploratory development, and increases in wage rates and in the price of all materials and power. After paying all costs and writing off £13,420 for Depreciation the working profit for the year was £19,909. A dividend of 7½ per cent. is proposed, leaving £4,756 to be carried forward.

From the description of the principal results of development during the year it will be understood that much of the work was either on new branches of as yet unknown continuity or else on lodes with tin content near or below the margin of payability. In consequence, the relatively large footage of exploratory work provided very little which can be included in estimates of the proved reserves of ore of payable grade. The work of the year has, however, put the mine in a better position to extend exploration westwards into the Roskear section and to explore northwards in the east end of the property.

The report and accounts were adopted.

Publications Received

The Industrial Review and Mining Year Book of Australia, 1956, provides a comprehensive record of developments in Australia's mining industry during the past year. Conditions were not easy for the industry in 1956, difficult problems being presented by rising costs on the one hand and on the other by falling prices for some of the principal mineral products. The intense search for uranium has died down, while those mines with good prospects have been developed to a stage where production is in sight. The goldmining industry found the going no easier in 1956 than in 1955, while taxation continued to affect many base-metal producers. Good progress was, nevertheless, reported by some major producers, while beach sands have enjoyed a boom. Generally, the pattern of mining development in Australia is clearer than it has been for some years. The publication reviews mineral development and exploration in the various States and also contains technical articles on mining subjects. As indicated by the title, its scope also covers the steel, engineering and manufacturing industries. The publishers are Paterson Brokensha Pty. Ltd., 65 Murray Street, Perth, Western Australia.

★

A memorandum entitled *The Canadian Silica Industry* has been published by The Department of Mines and Technical Surveys, Canada, Mines Branch (Memorandum Series No. 134, price 25 c.). The author is R. K. Collings, of the Industrial Minerals Division.

BRITISH ROPES LIMITED

CONTINUED PROGRESS

The thirty-fifth annual general meeting of British Ropes Limited was held on May 29 in London.

Mr. Herbert Smith (the chairman) in the course of his speech, said:—The accounts again disclose a satisfactory year's trading. The group profits for the year, before charging depreciation and auditors' remuneration, at £2,676,000 compared with £2,321,000 for the previous year and the increase of £355,000 reflects the continuing progress made by your company. The heavy burden of taxation has this year absorbed an even higher proportion of the profits. Your directors recommend a final dividend of 13% on the Ordinary Stock making a total of 17% for the year compared with 16% for the previous year.

Our export business, which now amounts to something like 20% of our total trade, has increased during the year under review: this increase is fairly evenly spread over our three trades, and has been achieved in spite of the increased intensity of foreign competition.

So far as our Home Trade in wire rope is concerned there has been a steady increase in sales totals, both as to tonnage and value, though Government Departments bought on a reduced scale. Demand from the Fishing and Shipping Trades has improved somewhat, and General Engineering provides a fairly constant market for ropes. We believe we have maintained our relative position in the trade.

The report and accounts were adopted.

Mining Year Book 1957

The 1957 edition of the *Mining Year Book* represents the 71st issue of this well-known reference work. The publishers are Walter E. Skinner, 20 Copthall Avenue, London, E.C.2, and the *Financial Times,* 72 Coleman Street, London, E.C.2. The price is 35s. net or 37s. post free.

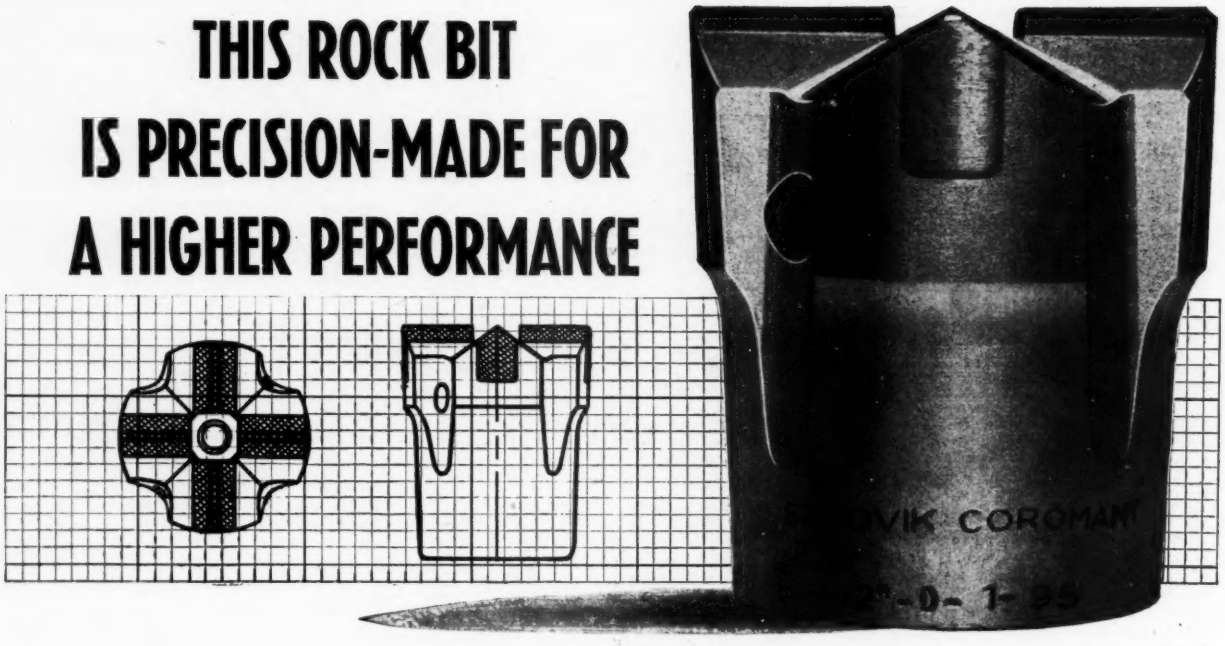
The book contains complete and up-to-date particulars of 951 companies, operating in all parts of the world, together with a list of names and addresses of 1,300 mining engineers and mine managers, and the companies in the book with which they are connected. The particulars of each company comprise: names of directors and other officials, description of the property and plant, operating results, capital, dividends and financial results. There is a buyers' Guide Section containing 680 headings, in alphabetical order, of the leading International manufacturers and suppliers of plant, equipment and accessories.

A feature included for the first time is world production tables by countries for gold and base metals.

Another innovation is that all Roman numerals, hitherto used at the front for advertisement pages, contents pages, index and Buyers' Guide sections, have been dispensed with. The numbering now runs consecutively from front to back of the book, facilitating readier reference.

A pleasing feature of this invaluable publication is the high standard of presentation, which matches the quality of the compilation.

THIS ROCK BIT IS PRECISION-MADE FOR A HIGHER PERFORMANCE



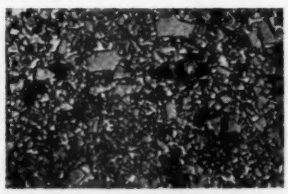
Nothing tougher and more wear-resistant than the insert of a Sandvik Coromant 776 bit

Rock bits that go on *and on* must have highest-grade tungsten-carbide inserts. Nothing but tungsten carbide in its purest state is good enough, will last as long. That's why the carbide that goes into a Sandvik Coromant 776 bit is meticulously controlled.

Sandvik, the world's largest manufacturers of brazed-in tungsten-carbide inserts for rock drilling, control every phase of production. Coromant carbide is scrutinized for impurities from the very first stages of processing the tungsten ore, right through to the final inserts. Add to that Sandvik's special process of securing the insert to the body, employing an exceptionally strong bonding metal, and you know why a Coromant 776 bit lasts longer. In 1955, more than 1,000 million feet were drilled with these inserts, all fitted to Sandvik Coromant bits or integral steels. *Nothing is more conclusive of the quality of Coromant bits.*

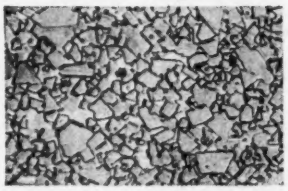
Low Quality Tungsten Carbide

These are unretouched, 1200-times enlarged microphotos. Above, carbide full of impurities. Those black marks are contaminations which are present when production and quality control are deficient. Contamination of this kind weakens the carbide and reduces its working life.



Sandvik Coromant Tungsten Carbide

This is Coromant carbide. Notice the uniformity of size and the even distribution of grain. Coromant inserts are free of dangerous porosity and impurities—the reason they go further, have greater strength.



Nothing stands the strain like the Swedish body of a Sandvik Coromant bit

When you put the strongest possible tungsten carbide into a rock bit, the body has to be the strongest available to take the extra strain. That's why Coromant bodies are made of high-quality Swedish alloy steel. But that's not all. Inserts and clearance are cylindrically-ground and the insert ends precision-tooled to exactly the same height. This means *smoother* drilling and *smoother* holes, because the load is equally distributed on all four inserts. *Precision* engineering such as this gives Coromant bits a longer life!

Nothing fits like the precision-milled threads of a Sandvik Coromant bit

In order to get a smooth profile of the highest accuracy, Coromant threads are precision-milled in a special thread-milling machine and not made with a tap. Precision-milling too protects the skirt from common fatigue failures.

Sandvik Coromant 776 bits

and Sandvik Coromant integral steels are available in standard sizes through Atlas Copco, who, in their own field, are the world's largest manufacturers of rock drills. For further information please contact your local Atlas Copco company or agent, or write to Atlas Copco AB, Stockholm 1, Sweden.

Atlas Copco

Manufacturers of Stationary and Portable Compressors, Rock-Drilling Equipment, Loaders, Pneumatic Tools and Paint-Spraying Equipment.

UNION MINIÈRE DU HAUT-KATANGA

The annual Meeting of Shareholders of Union Minière du Haut-Katanga was held in Brussels on May 23, **Mr. Gillet** being in the Chair.

In accordance with the agenda, the Meeting first approved the accounts for the financial year ended December, 1956. The Profit and Loss Account for 1956, circulated to the shareholders, showed a gross profit of F6,579,082,805. Taking into account the amortization of the year, the provision for taxation on profits and the sundry charges, the available profit balance, including the amount brought forward, totalled F4,632,219,794.

Out of this balance, F228,570,219 and F750,000,000 have been allocated respectively to the Reserve Fund and the Special Reserve and Contingencies Fund; a sum of F72,607,681 was carried forward. The amount left for distribution was accordingly F3,581,041,894.

The Meeting fixed the net dividend for the year 1956 at F2,300 net per share (or F230 per tenth of share). Taking into account the two interim dividends of F700 each paid in November, 1956, and in February, 1957, this entails a complementary dividend amounting to F900 net per share, or F90 net per tenth of share.

The Chairman informed the Meeting that Mr. H. Buttgenbach and Mr. F. Van Brée had resigned their director's mandate as of the date of this meeting. The Meeting conferred on Mr. Buttgenbach the title of honorory director. Mr. Van Brée was confirmed in his title of honorary chairman which he held since he left the Company's chairmanship.

Mr. J. P. Paulus and L. Wallef were appointed directors and Mr. A. Bourgeois auditor of the Company.

Mr. Sengier's Statement

After evoking the commemoration in Africa of the fiftieth anniversary of the Company and paying tribute to the abilities and devotion of the personnel, Mr. Sengier, Chairman of the Executive Committee of Union Minière, emphasized the importance of the capital expenditure programme in the mining, metallurgical, social and hydroelectric fields, necessary to develop the productions of the Company.

The copper production reached 247,400 metric tons in 1956. The tonnage delivered to the consumers during the financial year amounted to 237,600 tons. The characteristic figures of the accounts are the following:

	Millions
Net amount distributed to the shareholders, including the Comité Spécial du Katanga	2,856
Taxes and duties	3,432
Royalty to the Comité Spécial du Katanga	331
Amortization	900
Capital expenditures, including 525 millions for the Le Marinel power-station ...	2,241
Amount carried to reserve ... of which: to the Statutory Reserve Fund (5% of the profit) ... 228 millions to the Special Reserve and Contingencies Fund ... 750 millions	978

Mr. Sengier emphasized the State's growing share in the results of the activity of Union Minière.

A Period of Transition

The years 1955 and 1956 were for the copper market a very special period of transition, marked in 1955 by a deficiency of production resulting from various strikes and in 1956 by a still tight situation, becoming easier in the course of the second half of the year as a consequence of an increased production and of the slackening of consumption.

During this period, the copper quotation registered strong fluctuations unknown in the past, varying in New York from 30 to 46 cents in 1955 and from 32 to 50 cents in 1956, whereas in London it exceeded the equivalent of 53 cents in March, 1956, to fall back recently to levels approximating 30 cents. Quotations as high as those reached toward the end of 1955 and the beginning of 1956, continued Mr. Sengier, are prejudicial to the interests of producers and consumers by encouraging the opening up of mines with questionable rentability and by stimulating the use of substitute products. On the other hand, due to the exaggerated deterioration of quotations, certain producers are already at a loss.

It would be imprudent, added Mr. Sengier, to make forecasts regarding consumption and quotations of the metal, but there are good reasons to be optimistic.

The renovation and extension programme of Union Minière will be carried out, excluding unforeseen circumstances, without raising new capital, which will enable the Company to keep itself in a good position as regards its production costs; Mr. Sengier recalled that the latter vary in fact to a certain extent according to the selling price and this is a stabilizing factor. Satisfactory results can be expected for the future.

Points from the Directors' Report

The capital of the Company was raised from 5 to 8 billion Congolese francs. without issuing new shares, by deduction of 3 billion francs from the Special Reserve and Contingencies Fund.

The Company's copper production marked further progress in 1956, reaching 247,452 metric tons against 234,673 tons in 1955. Cobalt output amounted to 9,089 metric tons, against 8,567 tons in 1955.

The other productions were zinc concentrates, cadmium, uranium, radium, germanium and precious metals.

Important quantities of overburden were removed at the Kamoto copper-cobaltiferous deposit, and the equipment of the Kambove-West mine, the exploitation of which was decided with a view to compensate the future reduction of production at the Kipushi deposit, is in progress.

The producing capacity of the Shituru electrolysis plant was brought to 135,000 tons a year with the commissioning of a new electrolytic copper removal section.

The first civil engineering works connected with the erection of the new Western lixivation - electrolysis plants were undertaken.

The increase of its cobalt production enabled the Company to reduce its selling price from $2.60 to $2.35 per lb. This measure, followed by a new reduction to $2 early in 1957, will presumably have a favourable influence on the metal consumption.

A programme designed to develop the cobalt uses was undertaken, and an "Institut du Cobalt" (Cobalt Development Institute) was created, grouping the representatives of the main cobalt world producers, their executive organ being the "Centre d'Information du Cobalt" (Cobalt Information Centre). In no way will the action of this organization cover the commercial activities nor the fixing of the quotations of the metal and of its salts.

The exportation of uranium concentrates continued, in conformity with the existing agreements.

The Le Marinel power-station was put into service in 1956. Three of the four groups were operating at mid-March, 1957.

The supply of electric power to Northern Rhodesia began on October 1, 1956, after the completion of the 220,000 volts Le Marinel - Jadotville - Elisabethville - Kitwe (Northern Rhodesia) power transmission line and the commissioning of the first transformer at the Rhodesian sub-station.

A total of 1,293 million kWh. has been produced by the four power-stations: Francqui, Bia, Delcommune, Le Marinel, in 1956.

New social complexes for Congolese workers were erected in the big cities.

A programme of medico-social action in the hinterland of the large Katangese centres has been initiated with the collaboration of the governmental service.

RECENT INTERIM DIVIDEND ANNOUNCEMENTS

Company	*Year Ending*	*Dividends Latest*	*Dividends Corresponding*	*Date Payable*	*Total Last Year*
		%	%		%
Broken Hill South	30. 6.57	20	20	June 28	47½
Cam and Motor	30. 6.57	20	20	Aug. 9	40
Gopeng Consol.	30. 9.57	10	10	June 28	40
Mount Isa	30. 6.57	10	10	June 28	25
Mufilira Mines	30. 6.57	16½(*a*)	40	July 3	125
Pengkalen Ltd.	30. 9.57	20	25	June 7	70
North Broken Hill	30. 6.57	20	20	June 28	52½
Roan Antelope	30. 6.57	10(*a*)	35	July 6	100
Rhodesian Selection Trust	30. 6.57	13½(*b*)	40	July 3	120
Union Steel of S.A.	31.12.57	6	6	June 25	15
Barclays D.C.O.	30. 9.57	4	4	June 14	8
Siamese Tin	31.12.57	7½	7½	June 28	60

(*a*) On increased capital. (*b*) On doubled capital.

FOR SALE National Gas Type M4A6 Engine No. 68442 governed 900-RPM fitted Twin Disc Clutch unused since rebuilt by makers. Lying South Wales. Offers to Box No. 603, The Mining Journal Ltd., 15 Wilson Street, Moorgate, London, E.C.2.

FOR SALE "Star" Vertical percussion boring rig on crawler tracks fitted Ruston 3VRO Diesel Engine. Lying South Wales. Similar machine fitted International UD6 Diesel Engine. Lying Scotland. Both good working order with some spares rods and bits. Offers to Box No. 604, The Mining Journal, Ltd., 15 Wilson Street, Moorgate, London, E.C.2.

MOUNT ISA MINES LIMITED
QUEENSLAND, AUSTRALIA

VACANCIES FOR JUNIOR MINING ENGINEERS (SINGLE MEN)

Qualifications: B.Sc. or equivalent in Mining.

Salary: Minimum £A1,200 per annum dependent upon qualifications and experience. In addition to salary, successful applicants will receive a variable Lead Bonus at present (March, 1957) £A10 10s. per week.

Application: To the London Secretary, Adelaide House, King William Street, London, E.C.4, stating age and details of qualifications and experience.

HER MAJESTY'S OVERSEAS CIVIL SERVICE

BECHUANALAND PROTECTORATE

GEOLOGICAL SURVEY DEPARTMENT

Geologist required for general geological survey including examination of mineral occurrences and water supply work. First-class or good second-class honours degree in geology required. Increments granted for experience. Emoluments in scale of £765 to £1,515 per annum. Cost-of-living allowance at present 12% of salary for married officers and 6% for single. Bechuanaland Protectorate allowance of £60 and £30 per annum for married and single officers respectively. Commuted travelling and subsistence allowance of £105 per annum. Furnished quarters at rental. Generous leave. Contract or pensionable terms. Free passage on appointment and on leave.

Applications to: Director of Geological Survey, P.O. Lobatsi, Bechuanaland Protectorate.

NATIONAL COAL BOARD

DURHAM DIVISION

PLANNING ENGINEERS

Applications are invited for the above posts in No. 1 (North East Durham) Area and No. 4 (South East Durham) Area with Headquarters in South Shields and Bishop Auckland respectively.

Starting salary will be not less than £1,200 p.a.

The successful applicants will be responsible to the Area Planning Engineer, mainly on major mining projects.

APPLICATIONS, quoting reference E.V. 237/66 giving full particulars of age, education, qualifications and experience to: Divisional Chief Staff Officer, National Coal Board, Durham Division, 7 Side, Newcastle upon Tyne, 1.

GRADUATE WITH MINING DEGREE from a recognised school of mines or university and not more than one year's subsequent experience required by large copper mine in Northern Rhodesia. Successful applicant will initially undergo course covering practical and technical training with view to an official position. Starting salary £864 p.a. rising to £924 p.a. after 12 months, plus variable bonus at present upwards of 50% of basic salary and cost-of-living allowance currently £60 p.a.; also pension and life assurance scheme. Free outward passage. Leave at 41 days p.a. may be accumulated over three years' service. Married accommodation available after twelve/eighteen months' service depending on number in family. Send particulars age, qualifications and experience to Appointments Officer, R.14. Mine Employment Department, Selection Trust Building, Mason's Avenue, London. E.C.2.

ASSISTANT ACCOUNTANT. Applications are invited for the post of Assistant Accountant at a large iron ore mine in WEST AFRICA with capital developments in hand. Applicants need not be qualified but must have considerable costing experience including capital construction projects. Age 25/35. Salary £1,100/1,200 per annum according to qualifications and experience plus guaranteed minimum bonus of 5% and for married man marriage and child allowances. Retirement under Pension Scheme at age 55. Dependants' Income Scheme and Free Life Assurance. Tours of duty are approximately 15 months with generous leave in U.K., return passage paid. Free furnished accommodation and medical attention. Write giving full details of experience with copies references stating age, married or single to Sierra Leone Development Co. Ltd., Dept., A8, City-Gate House, Finsbury Square, E.C.2.

The National Coal Board, South Western Division, invite applications for the post of GROUP ELECTRICAL ENGINEER, E.G.5 in the No. 1 (Swansea) Area.

Applicants should possess at least a Higher National Certificate or its equivalent and have had extensive practical experience in colliery electrical engineering above and below ground and be fully conversant with electrical winders. In addition, experience in the preparation of electrical layouts, schemes for reconstruction work and power loading would be considered an advantage.

Salary range: £925—£1,425 per annum.

Full particulars of age, qualifications, experience and positions held together with details of present post and salary should be sent to the Divisional Chief Staff Officer, National Coal Board, Cambrian Buildings, Mount Stuart Square, Cardiff, by June 14, 1957.

GOVERNMENT OF NORTHERN RHODESIA

MINING ENGINEER, DUST RESEARCH, MINES DEPARTMENT

Qualifications: Diploma or degree in mining of a recognised School of Mines or University. At least three years post-graduate experience in dust sampling, including sampling by thermal precipitator, mine ventilation, etc.

Age Limits: 28-45 years.

Duties: To take dust samples and particulars of ventilation, temperature, humidity, etc. To evaluate and record information and to assist generally in a scheme designed to correlate the various factors relating to dust with the incidence of silicosis in mines in the Copper belt.

Terms of appointment: On permanent and pensionable terms with emoluments in the scale £905—£1,850 p.a. Free passages. Quarters provided at rental. Free medical attention. Generous leave. Income tax at local rates.

Apply to Director of Recruitment, Colonial Office, London, S.W.1. State age, qualifications and experience. Quote BCD 99/3/05.